TWENTIETH ANNUAL REPORT

OF THE

BOARD OF TRUSTEES

OF THE

Ohio State University,

TO THE

GOVERNOR OF THE STATE OF OHIO,

FOR THE YEAR 1890.

COLUMBUS, O.:
THE WESTBOTE COMPANY, PRINTERS.
1891.

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BOARD OF TRUSTEES.

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OHIO STATE UNIVERSITY.

1890–1891.

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BENJAMIN L. BOWEN, PH. D.,
Associate Professor French Language and Literature.—Indianola Place.

COLUMBUS, O., *November* 15, 1890.

To His Excellency GOVERNOR JAMES E. CAMPBELL:

SIR: I have the honor to transmit herewith, the twentieth annual report of the board of trustees of the Ohio State University.

Very respectfully, your obedient servant,

ALEXIS COPE,
Secretary Board of Trustees.

Report of Trustees.

OFFICE OF THE BOARD OF TRUSTEES, OHIO STATE UNIVERSITY,

COLUMBUS, OHIO, *November* 15, 1890.

Hon. JAMES E. CAMPBELL, *Governor of Ohio:*

SIR: In compliance with law, the board of trustees respectfully submit the twentieth annual report of the Ohio State University.

ENDOWMENT FUND.

The part of the irreducible debt of the State which forms the permanent endowment of the university, was, at the date of the last annual report $539,470.34, upon which the annual interest was $32,368.20. Since November 15, 1889, under the operations of the act entitled "an act to quiet title to unpatented lands in the Virginia Military District of Ohio," passed March 14, 1889, the following additions have been made thereto:

December 2, 1889, $1,202.85; December 30, 1889, $296.75; January 21, 1890, $162.50; March 3, 1890, $274.68; March 13, 1890, $45; April 10, 1890, $377.08; April 19, 1890, $62.79; May 29, 1890, $1,071.12; July 5, 1890, $225.38; July 28, 1890, $83.07; August 13, 1890, $300; September 6, 1890, $181.08; total, $4,282.30. Making the endowment fund November 15, 1890, $543,752.64, upon which the annual interest is $32,625.16.

As shown by the treasurer's report, the receipts other than from state appropriations have been as follows:

FINANCIAL STATEMENT.

Receipts other than from state appropriations:

Balance in hands of treasurer November 15, 1889	$5,024 78
Interest on endowment	30,412 53
Rents	2,173 50
Term and laboratory fees of students	8,521 00
Virginia military lands	80 50
Sale of stock to experimental station	1,300 47
Sale of plants, green-house	18 05
Amount received for deeds, act of March 14, 1889	122 00
Pasture	30 00

Sale of old lead and iron	$131 80
Testing babbitt metal, mechanical laboratory	10 00
From President Eliot, expenses overpaid	5 00
Gas furnished professors on campus	94 60
Total	$47,924 23

Receipts from State appropriations by requisition on the auditor of state:

Appropriation for appliances for teaching anatomy, etc	$210 60
" temp. equipment, etc., department general chem., etc	363 13
" erection and equipment building for elec. engineering	1,759 39
" ordinary repairs	2,860 62
" expenses of trustees	450 30
" salaries	12,000 00
" fuel and care of buildings	2,420 18
" improvement of campus	662 62
" library	1,552 85
" equipment, etc., school of mines	4,446 14
" green-house	600 00
" grading and paving	480 25
" additional boiler improvement, steam heating, etc	991 49
" furnishing and equipping laboratory	16,423 08
Total receipts from all sources	$93,144 89

The disbursements by the treasurer have been as follows:

Salaries other than paid out of equipments, school of mines, fuel and care of buildings	$51,005 00
Ordinary repairs	3,095 73
Fuel and care of buildings	3,771 80
Department supplies and apparatus	1,165 41
General supplies	165 23
Printing and advertising	653 47
Blank books and stationery	264 42
Water rents	306 74
Expense attendance farmers' institutes	76 74
Sunday lecture course and other lectures	325 20
Telephone service	125 20
Freight and drayage	151 74
Expenses Virginia military lands	251 50
Postage	168 00
Improvement of campus	686 32
Commencement expenses	143 14
Exchange of guns for battalion	97 51
Expenses of trustees	450 30
Furniture	394 01
Care of green-house	600 00
Library	1,207 23
Equipment of electrical laboratory	1,759 39
Appliances for teaching anatomy, etc	210 60
Temporary equipment, etc., departments of gen. chem., etc	363 13
Grading and paving	480 25

Additional boilers, new gas holder, imp. in steam heating, etc	$991 52
Equipment and support school of mines	4,446 14
Furnishing and equipping laboratory building	16,423 08
Miscellaneous	801 25
Total disbursements	$90,580 05
Balance in hands of treasurer November 15, 1890	$2,564 84

Said accounts include the funds received from the Virginia military lands, which have not been used in building and maintaining residences for the professors in accordance with the act of April 17, 1882.

The balance of said funds November 15, 1889, was	$10,022 90	
Receipts during the year	80 50	
		$10,103 40
Expenses incidental to sale and management		251 50
Balance November 15, 1890		$9,851 90

Since the repeal of section six of the act of April 3, 1873, providing for the sale and disposition of said lands, such balances have been carried into the account of the current funds of the university.

The full value of the outstanding collectible notes received from the sale of said lands, is $2,686.74.

STATE APPROPRIATIONS.

Name of appropriation.	Balance Nov. 15, 1889.	Appropriated during year.	Amount subject to draft.	Requisitions and estimates.	Balance Nov. 15, 1890.
Appliances for teaching anatomy, etc	$210 60		$210 60	$210 60	
Temporary equipment, etc.					
Departm'ts general chemistry, etc	381 73		381 73	363 13	$18 60
Laboratory building	24,171 48		24,171 48	24,169 74	1 74
Erection and equipment building for electrical engineering	2,028 74		2,028 74	1,759 39	269 35
Salaries		$12,000 00	12,000 00	12,000 00	
Ordinary repairs	24 77	3,000 00	3,024 77	2,860 62	164 15
Expenses of trustees	664 31		664 31	450 30	214 01
Fuel and care buildings	86 71	3,000 00	3,086 71	2,420 18	666 53
Improvement of campus	237 07	500 00	737 07	662 62	74 45
Green house	404 00	600 00	1,004 00	600 00	404 00
Library	308 51	2,000 00	2,308 51	1,552 86	755 65
Equipment, etc., school mines	3,210 44	3,500 00	6,710 44	4,446 14	2,264 30
Furnishing and equipping laboratory		20,000 00	20,000 00	16,423 08	3,576 92
Additional boilers, steam heating and gas holder		6,500 00	6,500 00	6,289 49	210 51
Grading and paving		500 00	500 00	480 25	19 75
Veterinary hospital		5,000 00	5,000 00	2,404 75	2,595 25
Totals	$31,728 36	$56,600 00	$88,328 36	$77,093 15	$11,235 21

Above is given a tabulated statement showing balances of the several state appropriations November 15, 1889, the sums appropriated during the year, the total amounts subject to draft, the disbursements during the year, and the balance November 15, 1890.

FIXED INCOME SHOULD BE PROVIDED.

It will be seen from the foregoing, that during the last fiscal year the current expenses of the university, including expenditures for ordinary repairs, care of green house, fuel and care of buildings, and improvement of campus, and equipment and support school of mines, were $70,352.11. Such expenses are more likely to be increased than diminished hereafter. To meet them the university has only the following resources:

Interest on the endowment	$32,625 16
Rents of residences	2,200 00
Term and laboratory fees of students (estimated)	9,000 00
Miscellaneous receipts (estimated)	500 00
Total	$44,325 16

The remaining $26,026.95 must be met by annual appropriations by the general assembly. That body has generously responded to appeals for means to meet current expenses and to promote the progress and development of the institution, but there is always a doubt whether it will continue to meet its naturally increasing wants. Every year trustees and faculty are apprehensive that the support given the previous year may be partly withdrawn, and that additional courses of instruction and additional teachers, which they have been encouraged to provide, may have to be abandoned. With a large part of the income dependent on annual legislative appropriations, no well matured plans for the future can be adopted. The university, in order to do its best work, should have a fixed income sufficient not only to meet current expenses, but also to provide for its orderly growth and development.

To meet the current expenses of the institution in excess of the amount of its ordinary income, the General Assembly has for the last five years made the following appropriations: 1885, $18,100; 1886, $18,600; 1887, $17,400; 1888, $20,600; 1889, $20,100; 1890, $24,600.

To remove the uncertainty in regard to income and apprehensiveness as to its continuance, would it not be well to add to the annual levy a fraction of a mill large enough to meet the actual wants of the university? This is done in other states, and has been justified by the results.

THE UNIVERSITY NO LONGER AN EXPERIMENT.

The university is no longer an experiment. It is one of the leading educational institutions of the country, and is exerting a wide and elevating influence. The committee on education of the national house of representatives, in a report made to that body in July last in support of a measure looking to a further endowment of the land grant colleges, said:

"The institutions founded under that act (the land grant act) were designated for the industrial classes. Without excluding any studies recognized as forming part of a liberal education, they were directed to make it their leading object 'to teach such branches of learning as are related to agriculture and the mechanical arts,' with the declared object of providing for those classes 'a liberal and practical education in the various pursuits and professions of life.' The institutions at the outset encountered many obstacles. They entered as pioneers into an untried field. The idea which they represented was new. There did not exist in the country at that time either the proper buildings, the proper equipment, or, most important of all, an adequate supply of teachers properly trained for the new work, and the result was, in many instances, a very incomplete success, if not absolute failure, in meeting the public expectation. Nevertheless, the inquiries of a committee of the United States house of representatives in 1874 demonstrated the fact that even at that early period they had achieved a degree of success which, when summed up, was a gratifying surprise to their friends, and an astonishment to their opponents.

"In the fifteen years since that report was printed, it is no exaggeration to say that the institutions have more than justified the best anticipations entertained at that time by their best friends. They have steadily adjusted themselves more and more to the requirements of the new situation. They have gathered about themselves a large body of men whose training and experience have prepared them to give thorough and advanced instruction in modern science and its applications to agriculture and the mechanical arts. They have collected laboratories, workshops, farms and apparatus for illustration, experiment and research. Their graduates are to be found taking high rank in every department of industry. In many states they have come to be recognized as leaders in scientific education, and have done much to create and mold that public sentiment, which is now everywhere demanding that the education given in schools of every grade shall, without any lowering of its aims, prepare more directly for the actual pursuits of industry."

THE MORRILL ACT.

They have so completely justified the wisdom of their creation, that the present congress, with great unanimity, on the 30th day of August last, passed an act providing an additional endowment for their support. Said act is as follows:

AN ACT to apply a portion of the proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of agriculture and the mechanic arts, established under the provisions of an act of congress approved July second, eighteen hundred and sixty-two.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be and hereby is appropriated out of any money in the treasury not otherwise appropriated, arising from the sales of public lands, to be paid as hereinafter provided to each state and territory for the more complete endowment and maintenance of colleges for the benefit of agriculture and the mechanic arts now established, or which may be hereafter established in accordance with an act of congress approved July second, eighteen hundred and sixty-two, the sum of fifteen thousand dollars for the year ending June thirtieth, eighteen hundred and ninety, and an annual increase of the amount of such appropriation thereafter for ten years by an additional sum of one thousand dollars over the preceding year; and the annual amount to be paid thereafter to each state and territory shall be twenty-five thousand dollars, to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction. *Provided* that no money shall be paid out under this act to any state or territory for the support and maintenance of a college where a distinction of race or color is made in the admission of students, but the establishment and maintenance of such colleges separately for white and colored students shall be held to be a compliance with the provisions of this act if the funds received in such state or territory be equitably divided as hereinafter set forth. *Provided*, that in any state in which there has been one college established in pursuance of the act of July second, eighteen hundred and sixty-two, and also in which an educational institution of like character has been established, or may be hereafter established, and is now aided by such state from its own revenue for the education of colored students in agriculture and the mechanic arts, however named or styled, or whether or not it has received money heretofore under the act to which this act is an amendment, the legislature of such state may propose and report to the secretary of the interior a just and equitable division of the fund to be received under this act between one college for white students and one institution for colored students established as aforesaid, which shall be divided into two parts and paid accordingly, and thereupon such institution for colored students shall be entitled to the benefits of this act and subject to its provisions as much as it would have been if it had been included under the act of eighteen hundred and sixty-two, and the fulfillment of the foregoing provisions shall be taken as a compliance with the provision in reference to separate colleges for white and colored students.

SECTION 2. That the sums hereby appropriated to the states and territories for the further endowment and support of colleges shall be annually paid on or before the thirty-first day of July of each year by the secretary of the treasury, upon the warrant of the secretary of the interior, out of the treasury of the United States, to the state or territorial treasurer, or to such officer as shall be designated by the laws of such state or territory to receive the same, who shall, upon the order of the trustees of the college or the institution for colored students, immediately pay over said sums to the treasurers of the respective colleges or other institutions entitled to receive the same, and such treasurers shall be required to report to the secretary of agriculture and to the secretary of

the interior, on or before the first day of September of each year, a detailed statement of the amount so received and of its disbursement. The grants of moneys authorized by this act are made subject to the legislative assent of the several states and territories to the purpose of said grants; provided that payments of such installments of the appropriation herein made as shall become due to any state before the adjournment of the regular session of legislature meeting next after the passage of this act shall be made upon the assent of the governor thereof, duly certified to the secretary of the treasury.

SECTION 3. That if any portion of the moneys received by the designated officer of the state or territory for the further and more complete endowment, support and maintenance of colleges or of institutions for colored students, as provided in this act, shall, by any action or contingency, be diminished or lost, or be misapplied, it shall be replaced by the state or territory to which it belongs, and until so replaced no subsequent appropriation shall be apportioned or paid to such state or territory; and no portion of said moneys shall be applied, directly or indirectly, under any pretense whatever, to the purchase, erection, preservation, or repair of any building or buildings. An annual report by the president of each of said colleges shall be made to the secretary of agriculture as well as to the secretary of the interior regarding the condition and progress of each college, including statistical information in relation to its receipts and expenditures, its library, the number of its students and professors, and also as to any improvements and experiments made under the direction of any experiment stations attached to said colleges, with their cost and results, and such other industrial and economical statistics as may be regarded as useful, one copy of which shall be transmitted by mail free to all other colleges further endowed under this act.

SECTION 4. That on or before the first day of July in each year after the passage of this act the secretary of the interior shall ascertain and certify to the secretary of the treasury as to each state and territory whether it is entitled to receive its share of the annual appropriation for colleges, or of institutions for colored students, under this act, and the amount which thereupon each is entitled, respectively, to receive. If the secretary of the interior shall withhold a certificate from any state or territory of its appropriation the facts and reasons therefor shall be reported to the president, and the amount involved shall be kept separate in the treasury until the close of the next congress in order that the state or territory may, if it should so desire, appeal to congress from the determination of the secretary of the interior. If the next congress shall not direct such sum to be paid it shall be covered into the treasury. And the secretary of the interior is hereby charged with the proper administration of this law.

SECTION 5. That the secretary of the interior shall annually report to congress the disbursements which have been made in all the states and territories, and also whether the appropriation of any state or territory has been withheld, and if so the reasons therefor.

SECTION 6. Congress may at any time amend, suspend or repeal any or all of the provisions of this act.

Approved August 30, 1890.

It will be noticed that the funds granted by the act are to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to facilities for such instruction. The act further provides that no part of such fund shall be applied, directly or indirectly, under any pretense whatever, to the purchase, erection, preservation or repair of any building or buildings, and that if any portion of said funds shall be diminished or lost, or be misapplied, it shall be replaced by the

state to which it belongs. The grants of moneys are made subject to the legislative assent of the several states to the purpose of said grants, provided that payments of such installments of the appropriations therein made as shall become due before the regular session of the legislature meeting next after the passage of the act, shall be made upon the assent of the governor duly certified to the secretary of the treasury.

Your excellency has certified the assent necessary to secure the appropriation for the year ending June 30, 1890, and it is safe to assume that the general assembly will cheerfully and promptly give the legislative assent required and will pledge the faith of the State to the provisions and purposes of the act.

This wise and generous grant of the general government for the encouragement of the university, should meet the hearty approval of the people of the state, should awaken increased interest in industrial education, and renewed efforts to strengthen the resources of the university and broaden its field of usefulness. To withhold any part of the appropriations heretofore granted for its support and maintenance, or to fail to provide the additional buildings necessary to make the congressional grant available for the purposes for which it is intended would be bad faith on the part of the state.

No part of the congressional grant has yet been received, but it is understood that the comptroller of the treasury has given a written opinion that the appropriation of $15,000 for the year ending June 30, 1890, and the $16,000 for the year ending June 30, 1891, are available; and that a draft for the first named sum has been signed by the secretary of the treasury and will soon be forwarded to the state treasurer of each state complying with the terms of the law. Owing to the recent date of the passage of the act and to the fact that no part of the funds have been received, it has not been practicable to mature any plan for the disposition of the same, but it will be the aim of the trustees to apply said funds in strict compliance with the terms of the grant, viz: to instruction in agriculture, the mechanic arts, the English language, the applications of mathematical, physical, natural and economic science, to industrial pursuits, and to facilities for such instruction.

ADDITIONAL BUILDINGS.

Additional instructors necessitate additional rooms, or buildings. As these can not be supplied from the fund, the state must provide them.

There is not room in the present buildings to properly accommodate the present classes. The chapel is over-crowded, the library is entirely too small to provide space for the books and room to consult them, the rooms occupied by the departments of physics, civil engineering, mathe-

matics, drawing and English, are not adequate for their accommodation; the military department is practically without quarters, and there is no room where students can be accommodated between recitations except in the small, over-crowded library.

ARMORY BUILDING.

During the regular session of the present general assembly, a bill was introduced providing an appropriation of $40,000 to erect a building for an armory, drill-hall and assembly-room for public occasions, such as commencement and university day. It is to be hoped that the appropriation will be granted at the next session. Its necessity is more urgent than ever before. The numbers in the battalion have increased to such an extent that additional guns are required to arm them, and there is no available room where they can properly be deposited and cared for. The only places where the companies can drill in inclement weather are the basements of the main and chemical buildings in close proximity to the water-closets, where the air is close and unwholesome. There is no suitable place to shelter the artillery guns and caissons. Recent regulations prescribed by the war department require that proper accommodations shall be provided for the safe keeping and preservation of the arms and equipments, and inasmuch as the general government supplies them, and also furnishes the officer to give instruction in military science and tactics, such regulations should be cheerfully complied with.

GEOLOGICAL MUSEUM AND LIBRARY.

The board of trustees has in previous reports urged the importance of providing a building for the geological museum and library. Both collections are too valuable to be longer subjected to danger of loss by fire. This is especially the case of the geological collection which contains many rare specimens which could not be easily duplicated. It has had the intelligent care of Professor Orton for many years and has been greatly enriched by his thoughtful and profound researches. Its loss would be a public calamity. The loss of the library would be scarcely less unfortunate. Though the number of books is only about ten thousand, they have been carefully selected and it would take a long time to replace them.

It is thought that a single building could be erected in such manner as to accommodate both collections, and as their removal from the rooms they now occupy would make space for other purposes, this is considered the most economic and wisest method of providing for the further expansion of the departments aided by the congressional grant. As soon as preliminary plans and estimates for such a building have been prepared

they will be presented to the general assembly. Attention is invited to the reports of President Scott and Professor Orton wherein this project is more fully considered.

MANUAL TRAINING.

The subject of manual training received the early consideration of the trustees of the university. On the third day of January, 1873, the Hon. Ralph Leete, then a member of the board, introduced the following resolution, which was adopted:

Resolved, That a committee of five members of this board be appointed by the president to inquire into the propriety and expediency of establishing a department of manual labor in connection with the operations of the college, and that such committee report their reasons and conclusions for or against said proposition at the next meeting of this board.

The record does not disclose what further action was taken on said resolution, and it is presumed that on account of the many other important matters which engrossed the attention of the first board of trustees of the institution, it was lost sight of. The subject came again into prominence in February, 1888, when President Hayes introduced a resolution, which was adopted, declaring that it is desirable to establish a department of manual training at the university as soon as practicable. The subject was shortly afterwards presented by him to the general assembly in a public address in the hall of the House of Representatives, and met with such favor that there is good reason to believe an appropriation for a building and equipment for such a department would have been made before this time if it had not been for the fire which destroyed the chemical laboratory building. The value of such training in the common and preparatory schools has been demonstrated beyond question, and some of the brightest minds of the country have become convinced that it should form a part of the education in schools of all classes and grades. A portion of the congressional grant could properly be used for instruction in and towards equipping such a department, and if the necessary buildings could be supplied, would be a wise application of such part of the funds. The suggestion made by Professor Robinson in his report herewith presented, that such a department be provided in connection with that of mechanical engineering is worthy of careful consideration.

FURNISHING AND EQUIPPING LABORATORY BUILDING.

Since the last annual report, the chemical laboratory building has been completed and furnished with the desks, cases, hoods, shelving, apparatus and supplies necessary for continuing the work of the several

departments for which it was intended. Great care has been exercised in its equipment and it has been made as complete and convenient as the means would allow. The several laboratories are large, roomy, well-ventilated, and furnish opportunities for better work than has been possible heretofore. The appropriation for the equipment of the building which has not been expended will all be needed to pay for apparatus which has been ordered from abroad but has not yet been received.

EQUIPMENT, ETC., SCHOOL OF MINES.

The annual appropriation for the equipment and support of the school of mines has been largely drawn upon for the equipment, apparatus and supplies for the mining department, and while it has made it possible to supply said department with superior facilities, it has allowed a larger portion of the appropriation for "furnishing and equipping" the building to be used in the departments of general chemistry, agricultural chemistry and pharmacy, which are all accommodated in the new laboratory building.

NEW BOILERS, ETC.

The last general assembly, besides the appropriation for furnishing and equipping the laboratory building, made an appropriation of $6,500 for "additional boilers, improvement of heating system, and new gas holder." From this appropriation, a battery of two 100lb Babcock and Wilcox boilers has been supplied, with all proper appliances and connections, and a new and larger tank for receiving the condensed steam, and a new gas holder have been constructed. These add greatly to the comfort and convenience of the buildings.

VETERINARY BUILDING.

The general assembly also made an appropiation of $5,000 for the veterinary department which had been without adequate facilities. This fund has been all devoted to the erection of a building for a veterinary hospital, with accommodations for the classes in such department. The following description of the building is furnished by Mr. F. W. Fay, the architect:

The building consist of two parts, a main portion 44x25 in size, and two stories high, and a rear portion 63½x30 and 1½ stories high.

The main part contains, in the basement a cellar for storage and the furnace, and in the first and second stories, a museum, drug store, office and sleeping room for the use of students attending patients in the hospital, a lecture room and office of the professor in charge, a room for

experiments in bacteriology, a photographic dark room, and ample halls.

The rear part of the building contains a clinic room 28x30 for the examination of patients and for surgical operations. This room has ample light in walls and roof, and a sand floor. The remainder of this portion of the building is occupied by a stable 28x31, where animals will be cared for while under treatment. The whole building is of brick with limestone foundation, freestone trimmings and black slate roof.

The rooms and halls are heated by a furnace, and are supplied with gas from the university gas works and with city water.

Although much delayed the building is under roof and approaching completion. When finished it will be a most valuable acquisition. The thoroughness of the instruction given in this department has received wide and deserved recognition, and is attracting the attention of those seeking such instruction in all parts of the country.

APPLICATION OF APPROPRIATIONS.

The appropriations for "salaries," "fuel and care of buildings," "ordinary repairs," and "improvement of the campus" have been used for the purposes named. The appropriation for salaries was $3,000 less than the sum estimated as necessary, and at the June meeting of the board of trustees it was found expedient to procure the written consent of the governor, auditor of state and attorney-general to create a possible deficiency of that amount. It is to be hoped that by rigid economy, such deficiency can be either prevented, or restricted to a less sum than that authorized.

ORDINARY REPAIRS.

The appropriations for "ordinary repairs," "fuel and care of buildings," and "improvement of the campus," are less than have been needed for such purposes, and have been supplemented by large sums drawn from the current income. With the ordinary repairs funds, the buildings have been thoroughly repaired, and are in excellent condition. As they get older, however, larger sums are needed to repair and preserve them from decay. There are now over twenty separate buildings on the university grounds, all of which need more or less attention every year.

FUEL AND CARE OF BUILDINGS.

The appropriation for "fuel and care of buildings," has been used for the purchase of coal for fuel and for gas, and for payment of a part of the salaries of the engineer, fireman and night watchman. The expenditures for this purpose naturally increase as the university expands.

IMPROVEMENT OF CAMPUS.

The appropriation for "improvement of the campus" is so small that little can be done beyond keeping the grass mowed, the walks swept and the drives graveled. The trustees at their meeting last June made an order directing the superintendent of the grounds to plant trees on Woodward and Woodruff avenues and along High street where needed, to replace those which have died. It is to be hoped that this can be done this fall and next spring. A timely appropriation of $500 for grading and paving around the new buildings made it possible to place the grounds about them in comparative order, but there is still much to be done to put them in first-rate condition. The campus possesses many natural advantages and should be made more beautiful and attractive each year. Professor Lazenby, in his report as superintendent of the grounds, presents the importance in an educational sense of tasteful surroundings. Attention is invited to said report, which is filed herewith.

NEW FENCES.

That part of the university estate fronting on High street presents such an unattractive and neglected appearance as to occasion frequent remark. A private owner would hardly be excused for allowing his premises to remain in such condition. Is the state less excusable in the management of its property? Trustees and faculty would rejoice to be supplied with means to improve this portion of the campus so that it would no longer be a reproach to the institution. An appropriation large enough to place a neat iron fence in front of the grounds in place of the old wooden one, to trim up the old trees and plant new ones, and to grade and roll the uneven surfaces is very desirable, and is hereby recommended.

SEWERAGE.

In the last annual report attention was called to the fact that the university from the time of its location has had no satisfactory system of sewerage; that the several buildings and the residences of the professors have been drained into cess-pools located at different places on the grounds; that the city has provided for a trunk sewer through the university grounds; that the contract for its construction had been awarded, and that it would be wise economy to connect the sewers from the buildings with it. Owing to a defect in the law providing for the bonds they could not be sold, and the improvement was suspended. The law has since been amended and the plan has been adopted of a double system of sewerage for the district in which the university is located. A contract for a storm sewer opening into the university grounds has been let and the work

thereon is progressing. The intercepting sewer has been constructed through the university farm, and plans are maturing for a system of small dry flow sewers to be connected with it. The buildings of the university should be connected with such system, and an appropriation is needed for that purpose. The health of the university and of the community adjacent thereto demands prompt action in this important matter.

OPENING NEIL AVENUE.

During the last regular session of the general assembly, a bill was introduced providing for opening and improving Neil avenue through the university grounds and granting to the Consolidated Street Railway Company of Columbus the privilege of extending its road thereon. Through the courtesy of Senator Wallace, the author of the bill, the members of the board of trustees were invited to appear before the committee to which the bill was referred and give their views upon the project. The subject had received the attention of the board at its meeting in November, 1889, and at the request of a committee of the citizens of Columbus interested in the proposed improvement, the portions of the city desiring an outlet through the street proposed, were visited. After such visit the board recorded the opinion that there seemed to be no immediate necessity for the opening and improvement of said street. Similar views were expressed at the hearing before the senate committee The bill failed to pass in the senate but was introduced in the house and is pending before that body. To provide opportunity for transit through the grounds from north to south the board is considering the propriety of opening and graveling a driveway along the extension of said avenue to Woodruff avenue, similar to the other drives through the grounds, and recommend an appropriation for such improvement. It is believed that this will meet the public demands, and will be attended with less expense than the plan proposed by the pending bill.

VIRGINIA MILITARY LANDS.

In the last annual report attention was called to the passage on March 14, 1889, of an act entitled "an act to quiet titles to unpatented lands in the Virginia Military District of Ohio," and the circumstances leading to its passage were recited at some length. The difficulties which had arisen in carrying out the provisions of said act were also recited, and it was recommended "that it be amended so as to authorize the board of trustees to require satisfactory evidence of all the facts necessary to establish a claim for a deed under said act, so as to authorize the additions to the endowment fund to be made on the 30th day of June, and 31st day of December; and to limit the time within which applications shall be filed,

reserving to the university the right to reclaim such lands where applications are not filed within the time prescribed." Such recommendations are hereby renewed.

Since the last annual report fifty-nine applications for deeds under said act have been approved and the deeds duly executed, the lands so conveyed comprising four thousand, two hundred and eighty-two and thirty-hundredths ($4,282\frac{30}{100}$) acres. The facts in each case have been properly certified to the auditor of state, and the sum of one dollar per acre, viz, $4,282.30 has been added to the endowment fund of the university.

In reciting the circumstances which led to the passage of the act above mentioned, the substance of a contract made by the board of trustees with Mr. Sam. Kendrick, of Chillicothe, in 1882, was given. Since the last annual report Mr. Kendrick has brought suit in the common pleas court of Franklin county against the board of trustees for the sum of $133,333, claiming that the acceptance by the board of said act of March 14, 1889, has made it impossible for it to comply with the terms of said contract, and that he is injured thereby in that amount. The board has demurred to the petition and the questions raised have been argued and submitted to the court for its decision.

At the meeting of the executive committee of the board of trustees in November, 1889, the firm of Cuppett & Webb, of Portsmouth, Ohio, by their attorney, N. W. Evans, appeared and made an offer of $600 for a deed for the lands contained in survey No. 15,835, in Scioto county, stating that his clients held the lands by a tax title which was invalid, that the lands had been held by a patent which had been improvidently issued after said lands had been ceded to the state of Ohio, that no one had occupied and improved said lands so as to claim a deed under the act of March 14, 1889, that the timber was about all taken off, and that the lands were of little value. The committee filed the proposition and directed one of its number, and the secretary to go on the lands, examine their condition and report upon the same. Said committee in its examination of said tract unexpectedly came upon a saw mill on said lands, owned and operated by said firm of Cuppett & Webb, and further investigation disclosed the fact that said firm had taken from said survey more than a million feet of lumber, and that there was then piled up about the mill and at other places on the premises 342,000 feet.

An action was begun in the court of common pleas of Scioto county against Cuppett & Webb, and the lumber was taken in replevin. It was afterwards taken from the trustees in a similar suit by other claimants of the land. Suit was also brought against Cuppett & Webb to recover possession of the land and for damages for the timber cut therefrom, other

than that taken in replevin. The case was tried in September, submitted to the court on a question of law and decided against the university. The questions involved are so important that the case has been carried up and is now pending in the circuit court of Scioto county.

THE FACULTY.

The number of professors employed by the university is eighteen—associate professors, four; assistant professors, three; and assistants ten. Their positions and compensation and a list of other persons employed by the university and their compensation will be found elsewhere in this report.

During the last year Dr. Geo. W. Knight, professor of history and political science, returned after a year's absence in Europe spent in study and research, and resumed the chair he had temporarily vacated. Professor Jno. W. Queen, who had acceptably filled the position during Dr. Knight's absence, retired therefrom with the respect and good will of his associates and the confidence of the trustees.

The detail of Lieutenant Chas. E. Kilbourne, U. S. A., as professor of military science and tactics expired June 30, 1890. The board of trustees made earnest efforts to have such detail extended, but the regulations of the war department would not permit it. During his three years of service with the university the efficiency of the military department was greatly increased. Through his efforts the arms which had been in use for several years were exchanged for new ones of improved pattern, additional instruction in the various duties of a soldier was given, and upon his recommendation commissions for the officers and warrants for the non-commissioned officers of the battalion were provided. Failing to secure his retention the board obtained the detail of Lieutenant Alexander Ogle, 17th Infantry, U. S. A., who reported for duty July 1st, and began his work at the beginning of the fall term.

At the June meeting of the board of trustees associate professors Eggers and Brown were advanced to the rank of professor in recognition of their valuable services in their respective departments. Mr. R. D. Mershon was appointed assistant in the department of physics, Mr. C. L. Arnold assistant in mathematics, and Mr. C. B. Morrey assistant in Latin. These young men are graduates of the class of 1890, their attainments are of a high order, and their work has already justified their selection.

NUMBER OF STUDENTS.

The number of students in attendance during the university year ending June 30, 1890, was as follows: fall term, 415; winter term, 392;

spring term, 363. The number in attendance at the present fall term is, at the date of this report 471, under graduates and seven post graduates.

DEGREES CONFERRED.

At the commencement in June, 1890, on the recommendation of the faculty, the following graduate degrees were conferred on the persons named below:

BACHELOR OF AGRICULTURE:

Knott Crockett Egbert	Tiffin, Ohio.
Charles Pinckney Fox	Springboro, Ohio.

BACHELOR OF SCIENCE:

Charles Lincoln Arnold	Milan, Ohio.
Joseph Chalmers Ritchey	Uniontown, Ohio.

CIVIL ENGINEER:

Albert Henry Heller	Wapakoneta, Ohio.
Joseph Henry Large	Freedom, Ohio.

BACHELOR OF ARTS:

Charles Henry Bennett	Columbus, Ohio.
George Perry Grimsley	Columbus, Ohio.
Jesse Lee Jones	Martin's Ferry, Ohio.
Hugh Clarence Laughlin	Belle Center, Ohio.
Alice Hynes Moody	Columbus, Ohio.
Charles Bradfield Morrey	Chester Hill, Ohio.
Nellie Talbot	Columbus, Ohio.

BACHELOR OF PHILOSOPHY:

Ada Mabel Basterdes	Columbus, Ohio.
Mana Ruckle Needels	Columbus, Ohio.
Bertha Scott	Columbus, Ohio.
Carl Clyde Smith	Chester Hill, Ohio.
Robert Kellogg Beach	Kelloggsville, Ohio.

MECHANICAL ENGINEER:

Russell Stimson Feicht	Dayton, Ohio.
Ralph Davenport Mershon	Zanesville, Ohio.
Charles Edward Skinner	Redfield, Ohio.

DOCTOR OF VETERINARY MEDICINE:

Samuel Ellsworth Bennett	East Liverpool, Ohio.
Harvey E. Briar	Troy, Ohio.
William Finley Lavery	South Solon, Ohio.
David Stuart White	Durham, Ohio.

GRADUATE IN PHARMACY:

William Henry Armstrong ..... Delaware, Ohio.
George Franklin Mason ..... Groveport, Ohio.
Daniel E. Miller..... Dayton, Ohio.

On the recommendation of the faculty the following post graduate degrees were also conferred:

MASTER OF ARTS:

Alberti Donizetti Garber..... Columbus, Ohio.

DOCTOR OF SCIENCE:

Clarence Morris Weed ..... Columbus, Ohio.

MASTER OF SCIENCE:

Theodore Lyman Griffin .... Columbus, Ohio.

The following honorary degrees were also conferred:

DOCTOR OF LAWS:

Allston Ellis ..... Hamilton, Ohio.
William I. Chamberlain..... .... Ames, Iowa.

DOCTOR OF PHILOSOPHY.

Joshua C. Hartzler..... Newark, Ohio.

MASTER OF AGRICULTURE:

Charles E. Thorne .... Columbus, Ohio.

PROGRESS OF THE UNIVERSITY.

The progress of the university during the past year has been most satisfactory. The attendance has largely increased and the improved facilities in many of the departments, notably in those of electrical engineering, mining engineering, general and agricultural chemistry and pharmacy, have been important factors in securing such increased attendance.

The publication of the proposed erection of a building for the veterinary department has attracted additional students in that department.

The numbers taking advantage of the free scholarship in the shorter course in agriculture offered to one student from each county in the state are larger than last year, and it is hoped that each county in the state will avail itself of the offer.

For the attendance in the several departments and classes, and the studies pursued in each, reference is hereby made to the reports of President Scott and the other members of the faculty. Said reports are unusually full and interesting and present the work of the past year in a clear and satisfactory manner. They also contain many important facts and suggestions not specially mentioned in this report.

THE AGRICULTURAL EXPERIMENT STATION.

The Ohio Agricultural Experiment Station has had its home with the university since its organization in 1882 Until Dec. 7, 1887, its series of experiments and investigations were carried on side by side with similar ones conducted by the university. At that time a new arrangement was entered into whereby such experiments and investigations and such part of the university farm as was needed therefor, were wholly turned over to the station, with the understanding that the professors of the university should have permission to still carry on original investigation and research, and to instruct their classes in their respective lines of work on the lands, and that students should be employed in the labor to be performed so far as practicable. This arrangement has proved so far eminently satisfactory. The intercourse between the officers of the station and those of the university have been close and mutually helpful, and the professors and students in agriculture and other branches have had all the benefits anticipated by the change. The work of experimentation has been carried on by the station with marked success; its reports and bulletins have attracted wide and favorable notice, and have been of great value to the agricultural interests of the country.

OHIO METEOROLOGICAL BUREAU.

The Ohio Meteorological Bureau still has its headquarters, makes its observations and collects its reports at the university, Professor Thomas being its director. Its reports are of increasing interest.

ESTIMATES.

The following estimates of appropriations for the next fiscal year are submitted:

Salaries	$15,000 00
Expenses of trustees	500 00
Ordinary repairs	3,500 00
Fuel and care of buildings	4,000 00
Care and improvement of campus	1,500 00
Department of forestry	2,500 00

New fences	$3,000 00
Sewerage	2,000 00
Care of green-house	600 00
Printing and advertising	1,000 00
Library	3,000 00
Equipment and support school of mines	3,500 00
Equipment department of physics	5,000 00

Very respectfully, your obedient servant,

ALEXIS COPE,

Secretary.

REPORT OF THE PRESIDENT.

To the President of the Board of Trustees of the Ohio State University:

DEAR SIR: The president of the university has the honor of submitting the following report for the year ending November 15, 1890:

In anticipation of his return from Europe, Professor George W. Knight was re-elected to the chair of history and political science in June last, and at the beginning of the present university year entered again on the duties of his position. At the same time the chair of the French language and literature was filled by the re-election of associate Professor Benjamin L. Bowen, who performed the work of the department so acceptably during the last year. Associate Professors Brown and Eggers were advanced to the rank of professor with full salary. Assistants Bradford and Whitney were made assistant professors.

The term of Lieut. Charles E. Kilbourne, commandant of the battalion, having expired July 1, Lieut. Alexander Ogle was, at the request of the board of trustees, detailed by the war department to succeed him, and is now in charge of the military department.

Charles L. Arnold, B. Sc., of the class of 1890, was elected assistant in mathematics; Charles B. Morrey, B. A., of the class of 1890, was elected assistant in Latin; and Ralph D. Mershon, M. E., also of this class, was elected assistant in physics.

Since the opening of the present year it has been found that the number of students in the laboratories of general chemistry and agricultural chemistry is so great as to make it necessary, in order to maintain the efficiency of the instruction, to place an assistant in each of them. Accordingly the executive committee, at a meeting held October 7, authorized appointments to be made, and the places have been filled by the selection of Mr. Clair A. Dye as assistant in general chemistry, and Mr. Lloyd M. Bloomfield as assistant in agricultural chemistry. Mr. Dye is a third-year student in pharmacy and Mr. Bloomfield is a junior in the full agricultural course.

In addition to the usual instruction a course of six lectures of a semi-popular character on sociological topics was delivered during the winter term by John Bascom, D. D., LL. D., of Williamstown, Mass. These lectures were clear and able discussions of living questions. The value

of such lectures introduced from without consists partly in the resume which they present of topics that occupy the attention of thinking men; but their chief value lies in bringing the stimulating power of a strong and active mind in contact with the minds of the students. Perhaps one of the most profitable uses to which the fund recently provided by Congress can be applied, will be to procure occasional lectures and courses of lectures in the several departments for which it is available.

Another series of lectures was delivered on Sunday afternoons, following the plan of the two preceding years. The attendance at these lectures was good; in some cases the room was crowded to its utmost capacity. I believe that they are of service to the university in several ways, and I hope that an appropriation will be made by which a similar course may be secured the present year.

During the spring term, by permission of the faculty, Mr. John R. Scott gave instruction in elocution to voluntary classes. About forty students entered these classes, and considerable interest was maintained. If regular instruction by a competent teacher were provided by the university, it would be eagerly sought by a large proportion of the students.

I append to this report an exhibit of the work done during the year in the several regular departments of the university.

The whole number of students in attendance during the year since my last report was 493. The numbers for the last four years are presented in the following table:

	1886–87.	1887–88.	1888–89.	1889–90.
Graduates	1	11	15	7
Seniors	29	19	22	27
Juniors	24	20	28	29
Sophomores	40	35	48	52
Freshmen	58	70	69	89
Special	8	20	22	33
	—159	—164	—189	—230
Briefer courses—				
Agriculture	19	28	18	24
Veterinary medicine	5	7	6	12
Pharmacy	12	21	21	21
Short mining	...	5	14	18
	— 36	— 61	— 59	— 75
Preparatory—				
Second year	60	63	82	68
First year	68	96	74	100
Irregular	20	6	9	13
	—148	—165	—165	—181
Totals	344	401	428	493

The distribution of the collegiate students among the courses of study for the last four years is shown in the following table:

	Totals.				B. A.				B. Ph.				B. Sc.				B. Ag.			
	1886-87.	1887-88.	1888-89.	1889-90.	1886-87.	1887-88.	1888-89.	1889-90.	1886-87.	1887-88.	1888-89.	1889-90.	1886-87.	1887-88.	1888-89.	1889-90.	1886-87.	1887-88.	1888-89.	1889-90.
Seniors	29	19	22	27	6	1	7	2	7	7	4	8	3	8	4	10	.....	.....	2	3
Juniors	24	20	28	29	2	5	5	7	6	5	9	2	10	3	10	9	.....	1	.....	2
Sophomores	40	35	48	52	13	7	12	13	10	9	3	9	5	12	9	5	3	.....	6	2
Freshmen	58	70	69	89	10	19	17	21	14	8	10	10	15	23	14	24	5	1	.....	.....
Special	8	20	22	33	.....	.....	1	6	.....	6	9	10	.....	5	3	1	.....	.....	.....	.....
Totals	159	164	189	230	31	32	42	49	37	35	35	39	33	51	40	49	8	2	8	7

	C. E.				M. E.				E. M.				G. Ph.				D. V. M.			
	1886-87.	1887 88.	1888-89.	1889-90.	1886-87.	1887-88.	1888-89.	1889-90.	1886-87.	1887-88.	1888-89.	1889-90.	1886-87.	1887-88.	1888-89.	1889-90.	1886-87.	1887-88.	1888-89.	1889-90.
Seniors	5	1	2	2	5	1	3	2	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Juniors	2	1	3	6	2	3	1	3	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sophomores	3	5	12	9	5	2	5	14	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Freshmen	9	14	16	15	5	4	11	18	.....	1	1	1	.....	.....		.....	.....	.....	.....	.....
Special	.....	6	6	5	.....	2	2	7	.....	1	1	2	.....	.....	.....	.....	.....	.....	.....	.....
Totals	19	27	39	37	17	12	22	44	6	5	3	3	12	21	21	21	5	7	5	12

The number in the general and the number in the technical courses are shown in the following table:

	1886–87.	1887–88.	1888–89.	1889–90.
General courses	101	113	114	137
Technical courses	50	51	75	166
Unclassified special	8	.....	.....	2
Totals	159	164	189	305

The number of women in attendance and their distribution among the courses are shown in the following table:

	Totals.				B. A.				B. Ph.				B. Sc.				C. E.	M. E.
	1886-87.	1887-88.	1888-89.	1889-90.	1886-87.	1887-88.	1888-89.	1889-90.	1886-87.	1887-88.	1888-89.	1889-90.	1886-87.	1887-88.	1888-89.	1889-90.	1887-88.	1889-90.
Graduates	1	1	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Seniors	4	3	5	5	2	.....	2	.....	1	1	3	4	1	2	.....	1	.....	.....
Juniors	1	2	6	4	.....	.....	2	1	.....	2	3	1	1	.....	1	2	.....	.....
Sophomores	4	10	5	7	.....	5	1	2	4	4	2	4	.....	1	2	1	.....	.....
Freshmen	16	9	11	11	6	1	2	4	8	5	6	5	2	2	3	1	1	1
Special	...	3	7	11	.....	.....	.....	3	.....	.....	.....	8	.....	.....	.....	...	.....	.....
	—26	—28	—37	—39														
Preparatory—																		
Second year	7	6	9	12	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
First year	10	12	9	11	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Irregular	3	...	3	3	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	—20	—18	—21	—26														
Totals	45	46	58	65	8	6	7	10	13	12	14	22	4	5	6	5	1	1

The whole number of degrees conferred in course since the founding of the university is two hundred and eight, of which two hundred and one were graduate, and seven were post-graduate. They are arranged by year and title in the following table:

	1878.	1879.	1880.	1881.	1882	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Bachelor of arts	1	1	6	2	2	1	5	4	6	8	6	1	7
Bachelor of philosophy	.....	.....	.....	2	.....	2	2	1	1	2	6	7	5
Bachelor of science	5	5	1	2	5	3	2	4	2	4	4	9	2
Bachelor of agriculture	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	2
Civil engineer	.....	.....	.....	.....	.....	1	1	1	3	3	4	1	2
Mechanical engineer	.....	.....	1	.....	.....	4	1	3	1	2	4	2	3
Mining engineer	.....	.....	1	1	2	.....	2	2	4	2	4	2	.....
Graduate in pharmacy	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	2	3
Dr. of veterinary medicine	.....	.....	.....	.....	.....	.....	.....	....	.....	1	.....	1	4
Master of arts	.....	.....	.....	.....	.....	.....	...	.....	.....	.....	.....	1	1
Master of science	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	1
Doctor of philosophy	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Doctor of science	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1

The whole number of students enrolled for the first term at the date of my report in each of the last four years was, in 1887, three hundred and thirty-eight; in 1888, three hundred and eighty-six; in 1889, four hundred and fifteen; and in 1890, four hundred and seventy-seven. Of these, in 1887, one was a graduate; in 1888, eleven were graduates; in 1889, thirteen were graduates; and in 1890, seven are graduates.

Within the year the faculty made an important modification of the relation of the university to the high schools. The plan now in force is set forth in the following circular, which was issued to the high schools of the state:

ADMISSION ON HIGH SCHOOL DIPLOMAS AND CERTIFICATES.

Diplomas and certificates of high schools and normal schools in Ohio will be accepted in lieu of examination, for preparatory studies, under the following conditions:

1. Each certificate must state in detail the studies pursued, the text books used, the amount of work done in each study, the amount of time devoted to it, the date of the examination and the rank or standing of the candidate in it. A copy of the course of study should accompany the certificate.

2. The certificate will be accepted for such studies only, or for such a part of each, as it shall show to have been satisfactorily accomplished. In no case will less than a full term's work in any study be accepted.

3. The certificate must be accompanied with a diploma, showing that the candidate has completed the course of study. But the faculty may exempt from this condition schools whose work is known to be exceptionally good, provided that the candidate has attended the school for two full years.

4. The certificate and diploma should be sent to the University not later than the first day of September.

5. In case the authorities of any high school or normal school desire to have a definite standing fixed for the admission of its graduates, a committee of the faculty will visit the school, and, on the report of this committee, a standing will be fixed for the graduates of the school.

6. Whenever it becomes evident, after a sufficient trial, that the graduates of any school are not adequately prepared, the diploma and certificate of such school will no longer be accepted.

Blank certificates will be furnished by the university.

Under these provisions, seventy-six certificates were presented at, or shortly before, the opening of the present year. Many of these were accepted only in part. Some were deficient in the amount of work, and some in the quality. Of those deficient in the amount of work, some were deficient because the text-book used was too brief or too elementary, and others, because the time devoted to the subject was too short; and still others because the grade of the candidate was too low.

The adoption of this plan greatly reduced the labor attending the admission of new students at the beginning of the present year, since a large part of it had already been done during the vacation, and especially during the two or three weeks immediately preceding the opening. This allowed a more deliberate consideration of each case than is possible amid the crowding duties of the first days of the year, and in case of uncertainty or obvious error in the certificate, there was opportunity for correspondence.

Whether the result will prove satisfactory remains to be seen. We have, as yet, discovered no reason to think that, if administered in a con-

servative way, the plan will not insure a good preparation of the candidates admitted under it. Perhaps one or two minor amendments are needed in order to secure greater regularity in the work of the candidates after their admission.

A few changes have been made in the courses of study. The Italian language has been introduced as an elective study for two hours a week through the senior year of the courses in arts and philosophy, taking the place in the latter of the two hours of French heretofore offered. It is hoped by the associate professor of French that he will soon have an opportunity to offer the Spanish language. The question therefore arises whether the title of the chair may not properly be changed to that of the Romance languages.

The physiological laboratory has been made an optional study for three hours a week through the junior year of the same courses.

English C, the study of masterpieces in English literature may now be continued through the senior as well as the junior year of the courses in arts and philosophy, and an additional two-hour elective in English—Shakespeare and the dramatists—has been added in the same year.

A change has also been made in the study of English during the second preparatory year. Instead of being mainly rhetorical work, it has become an elementary course in English literature, while that of the first preparatory year is now more strictly rhetorical than before. As the same requirements will be made of candidates for freshman standing who come from the high schools, the following circular was issued for the information of boards of education and high school teachers:

REQUIREMENTS IN ENGLISH.

Candidates for admission by examination to the freshman class will be examined as follows in English language, composition and rhetoric:

1. A grammatical and rhetorical analysis of short selections in prose and poetry. The rhetorical analysis will be confined chiefly to the meanings and forms of words, sentential structure, paragraphing and figures of speech.

2. An essay of about five hundred words to be written in the presence of the examiners, correct in spelling, punctuation, capital letters, grammar, sentential structure and paragraphing. The subjects for 1891 will be taken from the following works, with the substance of which—the plots, incidents, characters, etc.—it is expected that the candidate will make himself thoroughly familiar: Shakespeare's Julius Cæsar and Merchant of Venice; Coleridge's Ancient Mariner; Longfellow's Evangeline; Macaulay's Essay on Lord Clive; Webster's First Bunker Hill Oration; Irving's Alhambra; Scott's Old Mortality; George Eliot's Silas Marner; Hawthorne's House of the Seven Gables. Equivalents of these will, of course, be accepted.

For securing the proper preparation, the following course is recommended: 1st, a few lessons and constant practice in the proper use of the unabridged dictionaries. 2d, a thorough mastery of the elements of English grammar. 3d, daily recitations for at least one term in some such work as Hill's Elements of Rhetoric and Composition. 4th,

weekly exercises in original composition for at least one year. 5th, a careful reading of the works enumerated above.

A large proportion of those who seek admission to the university are found to be deficient in English. It is on every account desirable that such deficiency be provided against by a more extended and thorough preparation.

After an experiment of two years, during which the senior class was allowed no vacation between the conclusion of their last examinations and commencement, the faculty decided to return to the former plan. A vacation was given to the class of 1890, and will be given to future classes, beginning on the fourth Saturday preceding commencement. The theses are to be presented on or before June 1st. The reason for this change lies mainly in the fact that no small amount of time is required in which members of the class may make necessary preparations for commencement. It is an advantage, also, that an opportunity is afforded for making up any deficiencies in the final examinations, and for making such revisions of theses as may be found necessary after they are first submitted.

The plan of term examinations has been somewhat modified—first, by an extension to preparatory classes of a method which had already been tried for a year in the collegiate department; and secondly, by the repeal of a regulation adopted in May, 1889, by which the examination of each class was restricted to its regular hours of recitation. The first part of this action was only another step in a direction in which we have been moving for several years. The extreme point from which we started is found in the following rule, which was in force for some years prior to 1886:

"The standing of students shall be reported at the end of each term as 'passed with merit,' 'passed,' 'conditioned,' or 'failed,' such standing to be determined by examination, written wherever possible."

In October, 1886, the rule was modified as follows:

1. A written examination shall be held for each preparatory class at the close of each term.

2. A written examination shall be held for each collegiate class at the close of each term. When, however, two or more written examinations have been held during the term, the professor in charge of the department may, at his discretion, give credit for the work of the term to such students as have passed the mid-term examinations and given other satisfactory evidence of their proficiency, without holding them for the final written examination. Such mid-term examinations shall occupy only the regular recitation hour.

3. Credit for the work of the term in any laboratory may be given without a written examination, at the discretion of the professor in charge.

4. The standing of the students shall be reported as "passed with merit," "passed," "conditioned," or "failed."

It will be observed that preparatory classes were left subject to the

former rule, but that in collegiate classes exceptions might be made at the discretion of the professor in charge, provided that the students excepted had passed two written mid-term examinations and given other satisfactory evidence of their proficiency.

When this method had been followed about three years a still more liberal rule was adopted:

"The standing of collegiate students shall be reported at the end of each term. This standing shall be determined by the head of each department *by such means and methods as he may choose;* provided, first, that no student shall be reported failed without the opportunity of a written examination; and provided, further, that each instructor shall use in examination only his own recitation hours."

It was then no longer necessary to hold two mid-term examinations, or even one; but each professor in charge might decide for himself what method of fixing the standing of students should prevail in his department. He might employ written examinations or oral examinations, or he might dispense with examinations altogether, depending on the daily attendance and recitation or on a perusal of the student's note-books, or on any other test that he should deem sufficient; subject to the single limitation that no student should be reported as having failed without an opportunity to prove his attainments in a written examination.

The action of the last year, already mentioned, includes under the operation of this rule all students preparatory as well as collegiate.

The tendency to be traced in these successive changes is but one slight, though clear, manifestation of the general reaction in this country and in England against what was believed to be excessive examination. It can hardly be doubted that too much stress had been laid on examinations and that dependence on them had become too exclusive. I believe that this was true in the university. Three great evils naturally resulted, one physical, one intellectual and one moral. The fact that every thing was made to depend on examinations presented a strong temptation to neglect study while the time of examination was remote, and to cram as the time drew near. The effect of such a mode of work on the health could not but be detrimental, in many cases seriously so. The severe and prolonged nervous strain resulting from overwork and loss of sleep during two or three weeks of preparation and from the special excitement and labor of the examinations themselves, was often succeeded by physical prostration and derangement. The intellectual effect was thoroughly pernicious—superficial, ill-digested knowledge and irregular, spasmodic habits of work. The moral evil was even more serious. The temptation to procrastination and cramming was no greater than the temptation to dishonesty, and students of lax conscience fell easily into

the practice of cheating. Detection and severe penalties were to some extent effective in restraining it, but came far short of eradicating it.

Nevertheless, the uses of examinations are so obvious and so necessary that the idea of dispensing with them is not, and can not be entertained. The question is not examination or no examination, but one of degree and method. How far shall examinations be employed, and how shall they be conducted, are the points to be settled. The faculty has withdrawn its own imperative settlement, and now leaves each individual member to settle it for himself. The result will be a considerable diversity in the practice of the different departments, according to the subjects taught, the methods of instruction pursued and the private judgment of the professor. It is noteworthy, however, that so far a conservative spirit has prevailed, and that departures from the method which formerly prevailed, are comparatively few and slight.

The proviso requiring each instructor to restrict his examinations to his own recitation hours, was repealed in deference to the opinion of some members of the faculty, that under this limitation, examinations on the subjects taught by them could not be conducted with fairness to the students. It was held that in many cases most of the hour is consumed in attaining a good working condition, and, if the student must stop, he loses the advantage of the momentum he has gained, and when he returns the next day or the second day afterwards, he must spend considerable time in recovering the grasp of the subject and the facility of mind, which he was compelled to surrender.

In my last annual report I said:

"Perhaps no subject of so small magnitude has been so difficult to deal with as that of attendance at chapel. Different methods have been adopted from time to time, but none was satisfactory. Near the close of last year a committee was appointed by the faculty to consider the subject and report a plan. The result is that members of the senior class now act as monitors. The voluntary assumption of this duty by the class at the request of the faculty was an act of loyalty to the interests of the university which is worthy of strong commendation. The new plan is fairly inaugurated, and we hope that it will prove to be the final solution of the problem."

The hope here expressed was disappointed by the declination of the present senior class to accept the duty of monitors. During the last term of the year the record of attendance was kept by the members of the faculty and other instructors, who performed the duty in turn. At the opening of the present year a new problem confronted us. The room in which the exercises are held, and which is the largest one available, will not seat more than four hundred persons. We have received this term more than four hundred and seventy students. The question was considered by

the faculty, and a committee was appointed to draft a statement to be submitted to the board of trustees. The committee reported the following resolution, which was adopted by the faculty, and is hereby laid before you :

" *To the Board of Trustees of the Ohio State University :*

"The undersigned, a committee of the faculty of the Ohio State University, beg leave to call your attention to the fact that it has become impossible to enforce the regulation making attendance upon chapel exercises obligatory upon all students, because there are only four hundred seats in the chapel, and four hundred and seventy students are already enrolled.

"Under the circumstances, we respectfully ask whether it will not be best to make attendance on said exercises voluntary until such time as adequate seating capacity is provided.

"N. W. LORD,
"B. F. THOMAS,
"E. EGGERS,
" *Committee.*"

The year has witnessed a new and unprecedented interest in athletics. The athletic association showed from the beginning an unusual degree of vigor, and teams were formed for base ball, foot ball and lawn tennis. The base ball team entered the state association, and played against the teams of other colleges both here and in other parts of the state. In one instance a tour was made, during which three games were played, involving an absence of about two and a half days from college exercises. There was one match game of foot ball with the team of another college.

At the end of the year a request was made to the board of trustees to provide more extensive grounds and enclose them. The committee of the faculty appointed by the board in response to this request has agreed upon a plan which it is prepared to submit.

The advantages of cheerful and hearty physical exercise are so important as to be worthy of encouragement by the faculty and the board ; and these advantages are no doubt secured to some extent by the present system of athletics. But a well regulated system would secure them in a far greater degree with far less risk The exercise is now in most cases irregular and violent. Most of the time there is but little practice ; then comes a tremendous overstrain. Lawn tennis is not liable to this criticism, as the practice is more regular, and the match games are less violent. To foot ball, on the other hand, the criticism is especially applicable, and in this game accidents are frequent. Another evil that attends the present system of athletics, is its interference with university work. This is particularly true of intercollegiate games. An effort is made to restrict them to Saturdays and other holidays, but it is apparently impossible to play them without more or less neglect of regular duties, not only at the time when they are played, but during the period of training for them.

The faculty has adopted no plan for regulating these games so as to abate the evils that already exist or to prevent those that seem likely to arise. We have great confidence in the loyalty and earnestness of our students. Some of the most loyal and earnest are members of the various teams, and others are zealous friends and supporters of the association. Yet the history of athletics in the Eastern colleges, and the manifest tendency in those of Ohio, indicate that some limits should be prescribed.

A picked company of the battalion entered a contest at Portsmouth, Ohio, on the fourth of July last, and was successful in winning the first prize of five hundred dollars. This result, though gratifying to the friends of the university, did not surprise those who were acquainted with the spirit and work of the battalion. Perhaps the battalion was never before in so good a condition to enter such a contest. The training had been thorough, and the men were ambitious and confident.

The behavior of the students on this and on nearly every other occasion last year when bodies of them went abroad was creditable to them and to the university. They are learning to appreciate the fact that they represent the institution, and their care for her reputation makes them more careful for their own. Indeed, I take pleasure in saying that the conduct of the students at home, as well as abroad, has generally been honorable and becoming, and goes far to justify the liberal policy of government that the faculty has pursued.

As the most notable event mentioned in my last report was the destruction of the chemical building, so the most notable event to be mentioned in this one is the completion and occupancy of the building that has been erected in place of the one destroyed. The better location, the more ample space, the more convenient and complete equipment of the present building, place the institution in a position to accomplish far more in its chemical instruction than it could do before The liberality of the general assembly toward the university during the last two years has added greatly to its efficiency and has commanded wide and hearty approval.

The veterinary building for instruction and for hospital purposes, after many delays, is approaching completion. It will afford convenient accommodations for the department and will greatly promote its efficiency. It will probably operate to draw a larger number of students, when additional room will be required.

The buildings already provided by the state were greatly needed and are highly appreciated; but needs only less great, if even this can be said, remain to be supplied. The rapid increase in the number of students and the steady development of the courses of study, call for more teachers, more appliances and more buildings. The number of students in the

physical laboratory has risen from twenty-four in 1888–89 to thirty-two; the number in the physiological laboratory from thirteen in 1888–89 to twenty-six; the number in the mechanical laboratory from nineteen in 1888–89 to forty-one; the number in the chemical laboratory from sixteen in 1888–89 to thirty-six; and the number in the laboratory of agricultural chemistry from eighteen in 1888–89 to forty. In the department of mathematics there were two hundred and ten students in 1888–89, now there are two hundred and sixty-eight. In the department of English there were one hundred and ninety-nine in 1888–89, now there are four hundred and six. In the department of drawing there were fifty-six in 1888–89, now there are one hundred and nineteen. These numbers indicate a general pressure on the several departments, and, in some instances, the resources of the department are taxed to the utmost.

The congressional bill making an annual appropriation to the colleges in the several states founded on the land grant of 1862, was approved August 30, 1890, and is now a law. Under its provisions the university will receive fifteen thousand dollars the present year "and an annual increase of the amount of such appropriation thereafter for ten years by an additional sum of one thousand dollars over the preceding year;" after which the amount received will be twenty-five thousand dollars each year. For the introduction of this bill the country is indebted to the venerable Senator Morrill, who has long contemplated a measure to supplement the act of 1862, of which also he was the author. The colleges and universities created under that act have always commanded his interest and support, and he desired to crown his present term of service in the senate by the passage of a law that should enlarge and strengthen them. It is mainly due to his influence that the present timely and liberal provision has been made.

By the terms of the act the money appropriated is "to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction." Though this clause is intended as a limitation, the work of instruction in our own institution is confined so nearly to the departments of knowledge here specified that the restriction will scarcely be felt. I suppose that the only subjects now taught in the university that are shut out from the benefits of the law are the foreign languages, history, military science and tactics, and philosophy.

In the application of the amount received the present year a different course will have to be pursued from that which will be adopted as a permanent policy. It is now too late to open new lines of instruction or

to employ new teachers. It is to be noted moreover that the first installment of $15,000 is appropriated for the year ending June 30, 1890, and may therefore be used to meet deficiencies that already exist; but the greater part of it will remain to be expended in facilities for instruction. The use of the later appropriations should, in my judgment, be made in accordance with a carefully matured plan. Toward the formation of such a plan many important suggestions could be obtained from a visitation to other institutions, an observation of their work, and consultation with their officers. The combined thought and experience of those who have been long engaged in a work similar to our own, who are familiar with the history, the hindrances and the success of industrial education, and who are now confronted by the same problem with which we have to deal, constitute a source of information which, it seems to me, we can not afford to neglect.

Whatever the ultimate plan may be in other respects, the agricultural and mechanical departments should have a prominent place in it. With the former I include agricultural chemistry, botany and horticulture, and veterinary medicine as collateral branches. With the mechanical department I would include manual training, which may well have a larger place than we have yet provided for it, and which would be a very useful adjunct to the department of mechanical engineering.

If at first thought it appears that this new fund has suddenly placed the university beyond want, a more careful view of the situation will correct the impression. It is plain that the object contemplated was an extension of the scope and facilities of industrial education. To use it in raising the salaries of instructors already employed would be a violation of the spirit of the law. It must be devoted to the creation of new departments and to the enlargement of such as need enlargement by employing additional instructors and by providing apparatus and such other equipment as may promote their efficiency. This will entail the necessity of more room. But we are prohibited from expending any of our new resources for this purpose. The prohibition is very explicit and reads: "No portion of said moneys shall be applied, directly or indirectly, under any pretense whatever, to the purchase, erection, preservation, or repair of any building or buildings." It will be necessary therefore to appeal to the general assembly for means to accommodate this expansion of our work. The great cry even now is for more room. The museum, the library, the mechanical laboratory, the physical laboratory are all overcrowded. We have no fit accommodations for students during intervals between their recitations. The young ladies, now numbering ——— ——— ——, are crowded together in two small apartments, which scarcely afford them standing room. The general lecture room will not hold the students, to

say nothing of visitors on public occasions. Many of the class sections are too large for effective teaching; but to make more sections is impossible from lack of teachers and from lack of rooms.

What, then, will be our condition when from fifteen thousand to twenty-five thousand dollars a year are added to our expenditures for teaching and appliances for teaching? New necessities will be forced upon us and a stronger claim than ever will be presented for generous appropriations from the state.

A bill making an appropriation of forty thousand dollars to erect a drill hall and assembly room is now pending in the House of Representatives, and there is apparently a good prospect for its passage. This will supply a pressing deficiency.

The matter of a building for the geological museum has been presented year after year. May we not hope that the time has come when it will be provided? There are perhaps no more reasons for its erection to be urged now than have already been presented; but those reasons grow stronger every year. The size and value of the collection are constantly increasing, and as a consequence the room it occupies grows more straitened, and the loss in case of its destruction by fire would be the more disastrous. On the other hand the growth of the other departments makes it more and more desirable that the space now given to the department of geology should be available for other uses.

Precisely the same considerations apply to the library. Its growth, though much slower than it should have been, has reached such a limit that its present quarters are too narrow. Far ampler and more convenient space is a matter of immediate necessity. The library is the great educator, the central power, of the university, and ought to be given the most eligible conditions and the most abundant resources.

The Agricultural Experiment Station continues to be a friendly and useful co-laborer. It affords opportunities for observation and study; it gives employment to students; and in various other ways it accommodates and serves the university.

It is pleasant to record the growing interest in behalf of their *alma mater* that is manifest among the alumni. This is an omen for good. I trust that it will receive such encouragement as to develop it to much greater strength and that the university will on all occasions find in her sons and daughters a host of loyal exponents and supporters. The appointment of an alumnus as a member of the board of trustees forms a new bond, and may be expected to awaken a new activity among the alumni. The most decisive and hopeful sign yet given by them is the resolution passed at their meeting on the last commencement day, urging a renewed application to the state for a tax of one-twentieth of a mill on

the grand duplicate for the benefit of the university, and pledging their active assistance. This is a most welcome reinforcement. The application has been made annually for seven years. What is needed, and perhaps all that is needed, is a combined and cordial support of it. Shall so great an end fail for lack of a great effort? Let us summon our alumni, to whom the future of the university is even more dear than her past; let us call upon the friends of the university, whose name is already legion, and who dwell in every quarter of the state; let us appeal to all citizens who believe in the beneficent power of education and who appreciate the wisdom of a great intellectual center at the capital; and let us unite with all these in an earnest plea to the General Assembly for a munificent act by which, once for all, the position and office of the university shall be assured.

The reports of the heads of departments are herewith submitted, and the suggestions and requests which they present are commended to your careful consideration:

APPENDIX TO THE PRESIDENT'S REPORT.

EXHIBIT OF THE WORK OF INSTRUCTION DURING THE YEAR 1889-90.

Amount and kind of work.	Instructor.	Year in course.	Hours per week.	No. of students.
Agriculture.				
1. **Agriculture.**—Lectures on soils, their origin, characteristics, adaptability, etc., modes of culture, machinery, buildings, etc. First term, Emerson & Flint's "Manual of Agriculture"; second term, Johnson's "How Crops Grow"; third term, Allen's "Book of the Farm".	Prof. Townshend	Freshman	3-3-3	An average of thirty.
2. **Domestic Animals.**—First term, Curtis' "Horses, Cattle, Sheep and Swine." Second term, *Stock-feeding.* Stewart or Ormsby on "Feeding." Third term, *Stock-breeding.* Miles' "Stock-breeding." Recitations and lectures.	Same	Freshman	4-4-4	
3. **General Pathology.**—First term, Stowe's "Elements of Medicine," diseases of animals, their cause, prevention and cure. Second term, *Materia Medica*, (Bruce). A study of remedial agents. Standard reference books used. Third term, *Special Pathology.* Laws' "The Farmer's Veterinary Adviser."	Same	Freshman	3-3-3	
Agricultural Chemistry.				
1. **First Year.**—Principles of chemistry and chemical nomenclature. Norton's "Chemistry." Laboratory work. Weber's "Select Course in Qualitative Analysis." Lectures on the application of chemistry to agriculture. Quantitative analysis.	Prof. Weber	First year	5-5-5	12-10-9
2. Lectures on industries immediately connected with agriculture. Laboratory work—official methods of analysing fertilizers, dairy products, fruits, vegetables, etc.	Same	Soph. and Junior	5-0-5. 0-0-5.	

Botany and Horticulture.				
1. **Preparatory.**—Wood's "Class Book" or Gray's "Manual" the whole text. Lectures on vegetable physiology. One hundred flowering plants, analyzed by each pupil.	Prof. Lazenby	1st Prep	0-0-5	94
2. **Economic.** — Lectures. Henderson's "Handbook of Plants," and Smith's "Dictionary of Plants," as reference books.	Same	2d yr. Agr. 2d yr. Vet.	5-0-0	18
3. **Vegetable Physiology and Histology.**—Lectures and laboratory work. Goodale's "Physiological Botany," and "Plant Dissections," by Barnes & Coulter as reference books.	Same	2d yr. Agr. 2d yr. Vet.	0-5-0	6
4. **Advanced Structural Botany and Cryptogamic Botany.** —Lectures. Hackel's "True Grasses," Bessey's Botany, De Barry's "Bacteria," Cook and Berkeley's "Fungi," Underwood's "Ferns," etc., as reference books.	Same	Freshman; Soph. elect	2-2-2	14-24-13
5. **Horticulture.**—Includes fruit culture, vegetable gardening, landscape gardening, arboriculture and forestry. Lectures. Downing's "Fruit and Fruit Trees of America," "Landscape Gardening," Thomas' "American Fruit Culturist," Henderson's "Practical Floriculture."	Same	2d yr. Sh. Agr.; Soph. B. Ag.; Spec. Junior	5-5-5	13
Chemistry.				
1. **Elementary.**—First and second terms, inorganic. Lectures with Norton's text-book. Third term, organic. Same.	Prof. Norton	Freshman	4-2-4	108-98-58
2. **Qualitative Analysis.**—Laboratory work. In the dry way, with O'Brine's Laboratory Guide; and in the wet way, with Fresenins's Qualitative Analysis and Will's Tables, or with Will's Analysis and Wallach's Tables. Weekly lectures.	Prof. Norton and Mr. Keffer	Sophomore	5-5-5[1]	18-18-18
3. **Quantitative Analysis.**—Laboratory work, with Fresenins in gravimetric methods and Sutton in volumetric methods. Stoichiometry, and the theory of the balance.	Same	Junior and Senior	5-5-5[1]	7-7-7
4. **Special Laboratory Work**	Same		5-5-5[1]	1-1-1
5. **Organic Analysis.**—Prescott's text-book	Mr. Keffer	Third yr. in Pharmacy	0-3-0	0-4-0
6. **Toxicology.**—Tanner's text-book	Same	Same and third year in Vet. medicine		0-0-4

[1] One laboratory hour is equal to two hours by the clock.

EXHIBIT OF THE WORK OF INSTRUCTION—Continued.

Amount and kind of work.	Instructor.	Year in course.	Hours per week.	No. of students.
Civil Engineering.				
1. **Field Measurements.**—Instruction by text-book, lectures and field practice— Text-book: Hodgman & Bellows' "Land Surveying." Lectures on construction and maintenance of roads. Measurement of areas by compass and chain; running levels; staking out ditches, under-drains, roads, etc.	Prof. Brown..	First yr. Short Agr.	0-3-0.....	0-10-0
2. **Land Surveying.**—Instruction by text-book, lectures and practice with instruments— Text-book: Johnson's "Theory and Practice of Surveying." Lectures upon government division of lands in Ohio. Practice with usual surveying instruments; surveys involving ordinary practical difficulties.	Same.....	Soph. yr. C. E. course.	4-0-0.....	19-0-0
3. **Railroad Surveying.**—Instruction by text-book and field practice— Text-book: Searle's "Field Engineering." In the field each student has practice in all the positions of a regular engineer corps.	Same.....	Soph. yr. C. E. coures.	0-0-5.....	0-0-18
4. **Topographical Surveying.**—Instruction by text-book, lectures and practice— Text-book: Johnson's "Surveying." A stadia survey and a plat of a portion of university farm are made.	Same.....	Junior yr. C. E. course.	3-0-0.....	4-0-0
5. **Stereotomy.**—Instruction by text-book, drawing and practice— Text-book: Warren's "Stereotomy" (stone cutting). Plats are drawn to scale and models of masonry structure are made from plaster blocks, etc.	Same.....	Junior yr. C. E. course.	0-3-0.....	0-8-0
6. **Strains in Framed Structures.**—Instruction by text-book and problems. Text-book: DuBois' "Strains in Framed Structures," Part I.	Same.....	Junior yr. C. E. course.	0-0-5..	0-0-6

Determination of strains due to given loads; problems taken from existing structures. Graphical and algebraic methods.				
7. **Technical Drawing.**—Drawings and bills of material are made for the simpler wooden structures along railroads.	Same	Junior yr. C. E. course.	0–0–3	0–0–7
8. **Plans and Specifications.**—Instruction by text-book, problems and lectures— Text-book: DuBois' "Strains in Framed Structures," Part II. Dimensioning truss members; designing details; making shop drawings and bills; working out strain sheets. Lectures on specifications, illustrated from a collection of specifications. Plans, estimates and specifications are worked out for various pieces of work.	Same	Senior yr. C. E. course.	5–0–5	2–0–2
9. **Civil Engineering.**—Instruction by text-book, lectures, general reading— Text-books: Mahan's "Civil Engineering;" Adam's "Sewers and Drains;" Fanning's "Water Supply." Lecture topics include Ohio building stones, limes and cements, iron and steel, retaining walls, masonry, arches, roads and streets, railways, etc.; sewage disposal, pure water supply.	Same	Senior yr. C. E. course.	5–5–5	5–4–2
10. **Thesis.**—For graduation a thesis is prepared as the result of original work by the student. The thesis is usually a plan, estimate and specification for a definite piece of work, as a sewer, water supply, viaduct or bridge; or a study of some existing structure. The theses are usually accompanied by drawings.		Senior yr. C. E. course.		
Drawing.				
1. **Free Hand.**—(*a*) Outline work from flat copy, and from objects. Occasional lectures on the fundamental principles.	Assistant Professor Bradford and Mr. Taylor	Freshman. C.E., Mech. Eng., E. M. and Short Min.	2–0–0. 0–1–1.	
(*b*) Charcoal and crayon work from copies, casts and group of objects. Light, shade, contrast, relief, proportion, symmetry, style, etc., specially considered.		Sophomore B. Sc. E. E. Arts and Phil. elective.	1–1–1. 1–1–1	58–61–48
2. **Lettering.**—Third term; construction of nine plates (bristol) of letters and figures. Lectures and individual instruction. Lectures on "Drawing Instruments," "The Material Used," "The Proper Construction of Titles," etc.	Assistant Professor Bradford	Freshman. Engineering	0–0–2	0–0–39

EXHIBIT OF THE WORK OF INSTRUCTION—Continued.

Subject and amount of work.	Instructor.	Year in course.	Hours per week.	No. of students.
Drawing—Concluded.				
3. **Projection Drawing.**—Lectures, recitations, blackboard demonstrations, etc. Faunce's "Mechanical Drawing," chapters iv, vi and vii studied, and 16 plates of progressive problems drawn. Special attention given by lecture to working drawings and blue printing.	Assistant Professor Bradford	Sophomore engineering	3-0-0	24-0-0
4. **Descriptive Geometry.**—Recitations, blackboard demonstrations, etc., with Church's "Descriptive Geometry" as a text book. 20 plates of progressive problems completed.	Same	Same	0-3-0	0-26-0
5. **Shades, Shadows and Perspective.**—Lectures, recitations, blackboard demonstrations, etc. Church's "Shades, Shadows and Perspective," chapters iii and iv studied, and 14 plates of problems completed in colors.	Same	Same	0-0-3	0-0-19
English.				
1. **Grammar.**—Section I—First term. Welsh's "Lessons in English" completed. Occasional brief lectures by the instructor, written work by the class. Section II—Third term. Whitney's Essentials of English completed, lectures and written work. Hill's Elements of Rhetoric is now used as the text-book.	Prof. Chalmers	First Preparatory	5-0-5	28-0-28
2. **Composition.**—Welsh's "English Composition" completed. One essay and one speech each term from every student, with criticisms. Reading of English classics.	Prof. Chalmers	Second Preparatory	1-1-1	53-46-47
3. **Rhetoric.**—Two sections. Welsh's complete Rhetoric with written lessons and examinations; written analysis, by students, of Spencer's Philosophy of Style and Burke on the Sublime and Beautiful; selection of 100 figures of speech, and writing of one essay of 1,500 words by each student.	Prof. Chalmers	Freshman	2-2-2	100-94-79

4. **Literature.**—Chaucer's Canterbury Tales, with lectures on the origin and composition of the English language. History of English literature in Welsh's "Development of English Literature and Language;" essays and short speeches.	Prof. Chalmers	Sophomore	2–2–2	35–35–25
5 **Literature.** — Elective. The critical study of leading productions of the best writers, with essays, critiques and class discussions. Three essays and three critiques from each student. The third term was devoted to Shakespeare.	Prof. Chalmers	Junior	2–2–2	18–18–15
6. **Rhetoricals.**—Two sections. Three esssays of at least 1,500 words from each student. Lectures on the principles of success in English literature. Johnston's "American Orations" was read.	Prof. Chalmers	Sophomore and Junior.	1–1–1	Sophomo're 61–47–49 Juniors 25–30–26
Two new electives of two hours a week are now offered in the Senior year of the courses in Arts and Philosphy—English C., which is a continuation of the study of masterpieces, and English D., which is a study by lectures and essays of Shakespeare and the Dramatists.				
French.				
1. First term, Whitney's "Practical French Grammar," Morphology and Pronunciation. Second term, Super's "Preparatory French Reader;" Third term, 118 p., Crane's "Tableaux de la Revolution Francaise;" 173 pp., Sandeau's comedy, "Mademoiselle de la Sergliere," entire.	Associate Prof. Bowen	Freshman	5–5–5	70–65–51
2 (*a.*) B. Ph. course. First term, Fontaine's "Historiettes Modernes." Tome I., pp. 116. Composition, (by exercises on syntax); Chardenal's "French Exercises for Advanced Pupils," part I, second term, Crane's "Le Romantisure Francais." Lectures on literature, composition (24 exercises) finished; third term, literature of the 17th century; lectures, Corneille's "Horace."	Same	Sophomore B. Ph.	3–3–3	6–6–5
2 (*b.*) B. S. C. course. Luquiens' "French Prose of Popular Science and Descriptive Literature;" 238 pp., "Scenes de l'Enfance de V. Hugo;" 39 pp., Lectures on the life and works of the poet, 377.	Same	Sophomore. B. Sc.	2–2–2	19–17–17

EXHIBIT OF THE WORK OF INSTRUCTION—Continued.

Subject and amount of work.	Instructor.	Year in the course.	Hours per week.	No. of students.
French—Concluded.				
3. Elective. (*a*) Composition and conversational work. Chardenale's "French Exercises for Advanced Pupils," Part II. Exercises on idioms, pp. 95–133. Octave Fevillet's comedy, "Le Roman d'un Jeune Homme Pauvre;" 1st term.	Associate Professor Bowen.....	Junior	1–1–1.....	5–5–5
(*b*) Special authors or phases of literature, Alphonse Daudet, 6 *contes*, 73 pp. Theophile Gautier, "Scenes of Travel," 76 pp.; 1st term. Rocines, "Athalie." Special attention to versification. Lectures on various authors; 2d term.	Same.....	.....	2–2–2.....	
(*c*) Lyric Poetry. Gustave Masson's "La Lyre Francaise," 138 pp. Selections from Thibault de Champagne, Charles d'Orleans, Villou and others. 3d term.				
Geology.				
1. **Physical Geography.**—Two sections. Geikie's Elementary Lessons in Physical Geography, completed—Lectures and notes added.	Prof. Orton	Second Preparatory.....	5–0–0.....	30 to 50
2. **Elementary Geology.**—Lectures on dynamical and structural geology, and the geology of coal, clay and iron ores.	Same.....	Junior M. E. and 2d yr. Short Mining	0–5–0.....	8
3. **Economic Geology.**—Lectures and references.	Same.....	Senior E. M.....	0–5–0.....	1
4. **General Geology.** Lectures and portions of Le Contes' "Elements of Geology."	Same.....	Senior B. A., B. Ph., B. Sc., Junior C. E	5–5–0.....	20
5. **Paleontology.**	Same.....	Special	.....	2
German Language and Literature.				
1. **First Preparatory.** — Two sections. Otis's Grammar completed. "Neue Anekdoten," completed 1st and 2d terms. "Deutschland," 117 pp. Conversational exercises. 1st, 2d and 3d terms. Taught in two sections.	Mr. Mesloh	First Prep.....	5–5–5..	63–52–45

2. **Second Preparatory.** Grammar reviewed. "Die Braune Erica," 68 pp. 1st term. "Die Narsreisse," completed, 1st and 2d terms. "Licht und Wärme," 96 pp. 3d term.	Mr. Mesloh	Second Preparatory...	5-5-5	51-46-41
3. **Science Course, Elective.**—Special scientific reading. E. Gerland's "Licht und Wärme," finished. A. Pinner's "Einführung in das Studium der Chemie." A. Wassmuth's "Die Electrisität und ihre Anwendungen." O. Taschenberg's "Die Verwandlungen der Thiere." Selections from Wiedemann, "Electrisität," and scientific periodicals.	Professor Eggers	Soph. B. Sc.	2-2-2	7-7-7
4. **Sophomore.**—Brandt's Grammar. Lodeman's Exercises. "Neue Anekdoten," "Drei Novellen," by Paul Neyse. Freitag's "Aus dem Staate Friedrich's des Grossen."	Same	Soph. B. A. and B. Ph.	3-3-3	16-15-12
5. **Junior.**—Brandt's Grammar, completed. Kluge's "Geschichte der Deutschen Nationalliteratur," completed. Kluge's "Auswahl Deutscher Gedichte," completed, and History of German Literature.	Same	Junior B. A. and B. Ph.	3-3-3	16-17-15
6. **Senior Electives.**— 1. Gœthe's Jugend und Sturm und Drang Periode. 2. Faust I, and part of II. 3. Nibelungenlied, I.	Same	Senior Elective	3-3-3	
Greek.				
1. Study of forms and inflections, with written exercises in translation. Goodwin's Grammar and White's First Lessons. Xenophon's Anabasis, Bks I and II, Kelsey's edition.	Prof. Smith	Freshman	5-5-5	18
2. Xenophon's *Memorabilia* (Boise and Freeman's Selection), and introductory chapters of Plato's *Phædo*, with a discussion of Socrates' character as a teacher and a man. Herodotus. The Persian Invasion, using *Cox's History of Greece.* Homer's Odyssey, portions from Bks I, IX, XI and XIII. Prosodic forms studied.	Same	Sophomore	3-3-3	14
3. Xenophon's *Hellenica* (Manat's edition.) Lectures and conversations on Attic History. Plato's *Apology of Socrates* (Dyer's edition.) Studies in Attic legal procedure.	Same	Junior	3-3-3	6

EXHIBIT OF THE WORK OF INSTRUCTION—Continued.

Amount and kind of work.	Instructor.	Year in course.	Hours per week.	No. of students.
Greek—Concluded.				
Demosthenes, 3d Olynthiac, and two Philippic orations. Lectures on the development of Attic Oratory.				
4. Illiad, Bks. I. to VI. inclusive. Greek tragedy—Sophocles' *Oedipus Tyrannus* (White's edition), and Euripides' *Alcestis*. Lectures on Attic Drama.	Prof. Smith	Senior	3-3-3	6
Elective course—Lectures on the History of Ancient Art.		Senior	2-2-2	6
History and Political Science.				
1. **United States History.**—Johnston's "History of the U. S.," completed. Two sections.	Mr. Wilgus	1st Preparatory	5-5-0	24-23-0
2. **Civil Government.**—Section I. Macy's "Our Government," completed. Section II. Thorpe's "Government of the People of the U. S.," completed. Lectures.	Mr. Wilgus	1st Preparatory	0-5-5	0-29-23
3. **History A** (medieval and modern).—Myer's "Medieval and Modern History," with selected chapters from Fischer's "Outlines of Universal History," Hallam's "Middle Ages," Lodge's "Modern Europe," etc.; also Wilson's "The State," selected chapters and lectures.	Acting Prof. Queen	Junior	3-3-3	26-26-23
4. **History C** (seminary work).—Thesis work and investigation of special economic, industrial, social and historical themes.	Same	Jun. and Sen	2-2-2	5-5-5
5. **Constitutional and Political History of the U. S.**—Lectures and a comparative study of colonial charters and constitutions. Cooley's "Constitutional Law," completed. Johnston's "American Politics," completed.	Same	Jun. and Sen	2-2-2	26-25-25
6. **Political Economy.**—Walker's "Political Economy." Lectures and investigation and discussion of the practical economic and social questions of the day.	Same	Jun. and Sen	2-2-2	20-21-21

7. **International Law, Roman Law and Municipal Government.**—Woolsey's "International Law," with reference to Wheaton, Gallaudet, Wharton's "Digest," etc. Lectures and recitations. Morey's "Outlines of Roman Law." References, Maine, Austin, Holland, Hadley, Savigny, Bryce, Johns Hopkins Polit. Science Series.	Same	Jun. and Sen. elective	2–2–2	9–9–8
Latin Language and Literature.				
1. **Cæsar's Gallic War,** Allen & Greenough's edition, Bk. IV. entire, and Bk. I., chapters 13–32, inclusive. *Cicero*—Allen & Greenough's edition—four orations against Catiline, with *Pro Archia* and *Pro Marcello*. Special study of the grammar—Allen & Greenough's new edition, with Tomlinson's "Manual" as a basis.	Mr. Wilgus	1st Preparatory	5–5–5	25–29–24
2. **Virgil**—Chase & Stuart, or Greenough, Bk. III., last half, and all of Bks. V. and VI. *Cicero*,—Allen & Greenough's edition, four orations against Catiline, with *Pro Archia* and *Pro Marcello*; also Livy, "Legends of Ancient Rome" (Wilkinson), which was the basis of composition. Roman Antiquities (Wilkins), completed, and amplified with notes and lectures.	Mr. Wilgus	2d Preparatory	5–5–5	21–18–16
3. **Livy.**—Bk. XXI., with attention to Geog., History, etc.; also about twenty chapters read at sight. *Horace*—First three books, scanscion, mythology, historical allusions. Careful study of selected portions of the grammar. Composition, with Livy & Nepos as Latin text—translated and retranslated.	Prof. Derby	Freshman	5–5–5	37–23–20
4. Plautus' *Captivi*, Tacitus' *Agricola*, Pliny's *Epistles* (Bk. X), Juveral's *Satires*.	Same	Sophomore	3–3–3	18–16–14
5. Horace, *Satires and Epistles*, Quintilian (Bk X), *Literature*, Wilkins' "Primer," together with lectures by the Professor and essays by the students.	Same	Junior	2–2–2	15–13–12
Mathematics and Astronomy.				
1. **Algebra.**—First and second terms, Wentworth's "Elements" completed, 2 sections.	Lieut. Kilbourne	First Preparatory	5–5–0	53–53–0

EXHIBIT OF THE WORK OF INSTRUCTION—Continued.

Amount and kind of work.	Instructor.	Year in course.	Hours per week.	No. of students.
Mathematics and Astronomy—Concluded.				
2. **Plane Geometry.**—First term, Wentworth's completed. 3 sections.	Assistant Prof. McCoard	Second Preparatory	5-0-0	85-0-0
3. **Solid Geometry.**—Second term, Wentworth's completed. 3 sections.	Same	Second Preparatory	0-5-0	0-80-0
4. **Plane Trigonometry.**—Third term, Well's, pp. 139, including problems. 3 sections.	Assisant Prof. McCoard and Lieut. Kilbourne	Second Preparatory	0-0-5	0-0-92
5. **Analytical and Spherical Trigonometry.**—First term, Wells' completed. 2 sections.	Prof. Bohannan and assistant Prof. McCoard	Freshman	3-0-0	55-0-0
6. **Higher Algebra and Theory of Equations.**—Second term, Wentworth's Coll. Algebra from chap. XII to XXXI. 2 sec	Prof. Bohannan and assistant Prof. McCoard	Freshman	0-3-0	0-69-0
7. **Analytical Geometry.**—Third term, Bowser's, 120 pp. 2 sections.	Assistant Prof. McCoard	Freshman	0-0-3	0-0-62
8. **Analytical Geometry.**—First term, Chas. Smith, 9 chaps.; second term, *Differential Calculus;* third term, *Integral Calculus;* with notes and lectures.	Prof. Bohannan	Sophomore	5-5-5	35-27-27
9. **Least Squares.**—Merriam, entire book with notes and lectures. *Practical Astronomy,* Doolittle, completed.	Same	Junior	3-3-3	5-1-0
10. **Electives.**—Venable's "Notes on Solid Geometry," Williamson's "Differential Calculus," and Charles Smith's "Conic sections" from chap. X. to end of text.	Same	Junior	3 3 3 / 3 3 3 / 2 2 2	2-2-6
11. **Descriptive Astronomy.**—Third term, Young's General Astronomy, completed.	Same	Senior	0-0-5	0-0-15
Military Science and Tactics.				
1. Theoretical instruction in tactics, covering the school of the company and the important battalion movements.	First Lieut. Kilbourne	Freshman		88
2. "Art of War," (Hamilton) and military signaling	Same	Sophomore		30
3. Practical drill in the various forms of military movement..	Same	All male students except Juniors and Sens.		230

Mechanical Engineering.				
1. **Mechanism.**—Lectures on elementary combinations of mechanism according to the classification in Welles' Synoptical Tables. Also drawings and constructions.	Prof. Robinson	Junior	2-5-2	6-3-3
2. **Analytic Mechanics.**—Bowser's "Analytical Mechanics," completed, except chapter on *Kinematics* and last chapter in the book.	Same	Junior	5-5-0	5-5-0
3. **Strength of Materials.**—Wood's "Strength of Materials" and lectures.	Same	Junior	0-0-5	0-0-4
4. **Invention, Designing and Drawing.**—Designing of machinery by each student, and making of working drawings.	Same	Junior	5-0-5	7-0-7
5. **Thermodynamics**—Study of heat engines, and a few lectures on Pneumatics.	Same	Senior	5-0-0	2-0-0
6. **Prime-movers.**—Study of heat engines, water motors, their construction and efficiency.	Same	Senior	0-5-0	0-2-0
7. **Machinery and Mill Work.**—Study of valve gears, and smooth running of engines, fly-wheels, governors, dynamometers, etc.	Same	Senior	0-0-5	0-0-2
8. **Mechanical Laboratory.**—Elementary practice in moulding, casting, forging, wood-work and metal work. Construction practice upon some model or instrument such as may serve a useful purpose in the university. Fine measurements and critical examination of machinists' standard.	Prof. Robinson and Mr. Haines	Sophomore	3-3-3 or 2-2-2	25
Mining and Metallurgy.				
A. Regular Course.				
1. **Metallurgy.**—Lectures on subject of fuels, refractory materials, manufacture of iron, steel, copper, lead, etc. Reference to standard works.	Prof. Lord	Junior	5-5-0	6-6-0
2. **Metallurgical Laboratory.**—Special and complete training in modern technical analyses of gases, coals, ores, etc.,	Same	Junior	5-5-5	5-5-5
3. **Assaying.**—Lectures and practical work, the same as in the metallurgical laboratory.	Same	Senior	5-0-0	5-0-0

EXHIBIT OF THE WORK OF INSTRUCTION—Continued.

Amount and kind of work.	Instructor.	Year in course.	Hours per week.	No. of students.
Mining and Metallurgy—Concluded.				
4. **Determinative Mineralogy.**—Practice with blow-pipe and lamp, and then a series of graded tests of minerals, using Brush's "Tables of Minerals" as a basis.	Prof. Lord..	Junior ...	0–5–0	3–3–0
5. **Mine Surveying**	Asst. Prof. Sperr	Junior ..	0–0–5	
6. **Ore dressing.**—Lectures and reference to the standard works.	Prof. Lord	Senior	0–0–5	
7. **Mineralogy.**—Dana's "Manual" (the smaller one). Students required to know the characteristics, properties and tests of 100 minerals. Lectures on crystallography.	Same	Freshman, Sophomore.	0–0–3..	3–0–65
8. **Mine Engineering and Surveying.**—Actual leveling, platting and surveying, necessary in mining. Each student going over the work in turn.	Asst. Prof. Sperr	Senior	5–5–5	2–2–2
B. Short Course.				
1. **Mineral Chemistry.**—Lectures and laboratory practice. Illustrated talks on subjects of special importance to miners.	Prof. Lord	2d yr	5–5–2	4–4–4
2. **Short Mining Algebra.**—Wenthworth's Elements completed, 3 terms.	Asst. Prof. Sperr	1st yr	5–5–5..	11–11–11
3. **Mine Surveying.**—Specially for coal mining	Same	2d year	5–5–5	3–3–3
4. **Ventilation.**				
5. **Mine Operating.**—The whole plant of a typical mine worked out step by step.				
Pharmacy.				
A course of three years is provided, but the first year is preparatory.				
Second year.—Pharmaceutical work proper begins. Lectures, laboratory work and the compounding of official preparations by the student.	Assoc. Prof. Kauffman	2d yr	3–5–5	

	Third year.—Practice in filling prescriptions, with the actual routine work of a drug store. The text and reference books are "Remington's Practice of Pharmacy," and the "U. S. Pharmacopœia" and "Dispensatories."	Same	3d yr	5–3–5	23
	Philosophy.				
	Psychology.—First term, the Senses and the Intellect. Second term, the Feelings and the Will. Recitations, Discussions and Lectures.	Pres't Scott	Juniors	3–3–0	26–27–0
	Ethics.—Third term, Cutler's "Beginning of Ethics."	Same	Juniors	0–0–3	0–0–21
	Logic.—First term, Jevons' "Elementary Lessons." Recitations, Discussions and Praxis. Second term, Jevons' "Principles of Science."	Same	Seniors	3–3–0	16–14–0
	History of Philosophy.—Schwegler's "History of Philsophy." Recitations, Discussions and Lectures.	Same	Seniors	0–0–3	0–0–15
	Physics.				
1.	**Preparatory.**—Gage's "Elements of Physics," completed. Lectures and experiment, two sections. Second and third terms.	Ass't Prof. Whitney	Second Preparatory	0–5–5	0–90–90
2.	**Sophomore.**—Anthony & Brackett's Physics, Lectures and experiments, etc.	Prof. Thomas	Sophomore Electrical Course	3–3–3 5–5–5	41–41–41
3.	**Junior.**—Lectures, experiments, recitations, etc. Cumming, Mascart and Joubert.	Ass't Prof. Whitney	Junior Elec	2–2–2	2–2–2
4.	**Senior.**—Lectures on theory, design, construction and use of dynamo-electric machinery; also on other kindred topics of importance.	Prof. Thomas	Senior	2–2–2	3–3–3
5.	**Physical Laboratory.**—Experiment, investigation and research by the students.	Same	Junior and Senior	5–5–5	22–22–22
	Veterinary Medicine.				
1.	**Veterinary Anatomy.**—Lectures and recitations. Chauveau's "Comparative Anatomy," by Fleming. Laboratory work.	Dr. Lavery	1st year	3–5–3	7–10–5
2.	**Pathology and Therapeutics.**—Lectures. Robertson, Williams, Gresswell, Roell, etc., references. *Veterinary Anatomy, Special Pathology and Therapeutics.*	Prof. Detmers	2d year	5–2–5	7–10–5
3.	**Infectious and Contagious Diseases.**—Lectures	Same	3d year	5–5–5	7–7–7
4.	**Surgical Diseases and Operations.**—Lectures, first and second terms.	Same		5–5–0	2–2–0

EXHIBIT OF THE WORK OF INSTRUCTION—Concluded.

Amount and kind of work.	Instructor.	Year in course.	Hours per week.	No. of students.
Veterinary Medicine—Concluded.				
5. **Forensic Veterinary Medicine.**—Lectures. Third term...	Prof. Detmers	Third year	0–0–5	0–0–7
6. **Veterinary Obstetrics.**—*Toxicology.* Lectures. Third term.	Same	Third year	0–0–5	0–0–4
7. **Bacteriology.**—Lectures. Third term	Same	Third year	0–0–1	0–0–4
8. **Clinical Practice**	Same	Second and third years.	5–5–5	9–9–9
Zoology and Comparative Anatomy.				
1. **Human Anatomy and Physiology.**—(*a*) Regular course. Recitations, lectures and laboratory work. Martin's "Human Body." (*b*) Special for engineering students. Recitations, lectures, etc. Martin's "Briefer Course."	Prof. Kellicott	(*a*) Sophomore (*b*) Freshman	3–3–3 0–5–0	53 25
2. **Physiological Laboratory.**—(1) Vertebrate dissections, Howell's "Dissection of the Dog" Parker's "Zoötomy." Ecker's "Anatomy of the Frog." (2) The use of apparatus, saccharimeter, myograph, sphymograph. (3) Physiological Chemistry, Sterling's "Physiological Laboratory."		Junior B. A. and B. Ph.	3–3–3	3
3. **Zoology and Entomology.**—Lecture and laboratory. Huxley & Martin's "Biology." Parker's "Zoötomy." Jordan's "Manual of the Vertebrates." Comstock's "Elements."		Junior B. Agr. Junior and Senior B. A. and B. Ph.	3–3–3 5–5–5	6 3
4. **Histology.**—Lectures and laboratory work. Schaeffer's "Essentials," complete.	Mr. Sigerfoos	First year Vet. med. Junior and senior B. A. and B. Ph.	 5–5–5	 9
5. **Comparative Anatomy.**—Lectures, one hour per week; laboratory, four hours per week. Fowler's "Osteology," Parker's "Zoötomy."	Prof. Kellicott	Sophomore B. Sc.	3–3–3	8
6. **Microscopy.**—Lectures on the microscope and its uses, followed by actual examinations of drugs, etc.—Oldberg and Wall's "Companion to the Pharmacopœia."		Second year Pharmacy.	0–0–2	8

AGRICULTURE.

To the President of the Ohio State University:

DEAR SIR: The annual report of the department of agriculture for the year ending June 25, 1890, is respectfully submitted.

The number of students in the three classes under my instruction for the three terms of the past year has averaged thirty. The short agricultural course of two years appears to be more acceptable to young farmers than that which is longer and more complete; a majority of agricultural students have taken the shorter course.

In this department three lines of work are pursued. The first relates to soils, their origin, characteristics, adaptations and means of improvement; farm crops and modes of culture, farm implements and machinery, fences, buildings, accounts, etc. The text books used by this class are for the first term "Manual of Agriculture," by Emerson & Flint; for the second term S. W. Johnson's "How Crops Grow," or "How Crops Feed;" for the third term "Allen's Book of the Farm." Recitations daily, five days of the week.

The second class is occupied through the year with the study of domestic animals. For the first term students use as a text book, Curtis's "Horses, Cattle, Sheep and Swine." For the second term Stewart or Ormsby on Feeding; for the third term Miles on Stock Breeding. This class has daily recitations five days of the week.

The third class makes a study of animal diseases, their prevention and cure. For the first term the text-book used is Stone's Elements of Medicine; for the second term the time is occupied with Remedial Agents, Bruce's Materia Medica, being the text-book, while Lander Brunton's Materia Medica and Bentley T. Frimen's Medical Botany, etc., are used for reference. During the third term this class uses The Farmer's Veterinary Adviser, by Prof. Law, as a text-book. The recitations of this class are daily, five days per week. Students who expect to receive the degree of Bachelor of Agriculture are in these classes during their Freshman year. Short course agricultural students are in these classes during their second year.

The Ohio Experiment Station, which is located upon the University farm, gives employment, with compensation, to many agricultural students, who use this as a means of defraying expenses.

Yours respectfully,

N. S. TOWNSHEND,
Professor of Agriculture.

October, 1890.

AGRICULTURAL CHEMISTRY.

To the President of the University:

DEAR SIR: The undersigned respectfully submits the following annual report of the department of agricultural chemistry, for the year ending June 25, 1890:

The work in this department was carried on during the whole year in rooms assigned to it in the horticultural building, a small room on the first floor being used for a lecture room, and a part of the museum for a laboratory. Owing to the meager facilities for work, which these temporary quarters afforded, the second year students of this department were advised to arrange their studies so as to take their advanced work in the following year in the new chemical building. The enrollment of first year students was as follows:

Fall term	12
Winter term	10
Spring term	9

Mr. C. P. Fox, of the senior class, was engaged during the year in an original research on the action of food preservatives on salivary digestion. The work was done in a manner that reflects a great deal of credit upon Mr. Fox, and the results, which were embraced in his graduating thesis, are of interest to the public as well as to science.

Mr. K. C. Egbert also did the chemical work pertaining to his thesis in this department.

Respectfully yours,

H. A. WEBER,
Professor of Agricultural Chemistry.

October, 1890.

BOTANY AND HORTICULTURE.

To the President of the University:

DEAR SIR: I have the honor to submit the annual report of the department of botany and horticulture for the year ending June 25, 1890.

The following tabulated statement presents the subjects taught, together with the number of hours devoted to each, and the number of students enrolled in each separate class:

Fall term, 1889.	No. of student.	Lectures, recitations or reviews. Hours per week.	Laboratory and field work. Hours per week.
Economic or applied botany	18	4	2
Advanced structural botany, compositæ, gramineæ, etc. (general courses)	14	2	1
Horticulture (large fruits)	11	4	2
Special horticulture	2	2	4
Special botany	1	1	4
Totals	46	13	13
Winter term, 1890.			
Physiological botany, plant physiology and histology	6	3	2
Cryptogamic botany	24	2	1
Special horticulture	2	2	3
Totals	32	7	6
Spring term, 1890.			
Structural and systematic botany	94	4	2
Wood's Class Book, or Gray's Lessons and Manuals, etc.; see first supplementary page Advanced Botany	13	2	1
Horticultural (small fruits)	7	2	4
Landscape gardening	7	3	2
Special botany	2	1	4
Special horticulture	5	1	5
Totals	128	13	18

Total enrollment in all classes..... 206
Number of different students 131

There has been no special change in the method of teaching since last year. The instruction is mainly by lectures, supplemented by frequent reviews, laboratory practice, notes of personal observation and field work. As I have before stated, the aim is to train, as well as to teach: to show methods, as well as to communicate knowledge. Text-books are used mainly for reference, and a large portion of the time spent in the class-room is given to the direct study of plants and their products.

In general, the progress of the students in this department during the year has been in every way satisfactory, and the diligence and enthusiasm evinced by nearly all have made the work of instruction a pleasant task.

The required work during the spring term is more than one instructor ought to undertake. The number of students is so large that it is impossible to give that personal attention to each that is necessary to secure the best results.

I respectfully ask that an assistant in this department be appointed.

MEANS OF ILLUSTRATION.

Owing to the crowded condition of the rooms in the botanical building, every available foot of space being occupied by the departments of agricultural chemistry and pharmacy, little progress has been made during the year in the way of collecting and preparing illustrative material.

The means of illustration in this department naturally divide into two distinct groups; (1) such as are suitable for class-room examination and study; (2) such as are useful for out-door observation and practice.

For the class-room we require large, carefully selected, and well preserved *herbaria*. We also need a greatly enlarged collection of woods, fibres, fruits, seeds and other material representing various economic products of the vegetable kingdom.

The means of out-door illustration are being constantly extended, and in some particulars are now comprehensive and valuable.

One great need still exists, and that is—

A BOTANIC GARDEN AND ARBORETUM.

A few years ago the Ohio State Horticultural Society unanimously adopted the following resolution:

Resolved, That the establishment and maintenance at the Ohio State University of a well-equipped garden and arboretum, for the illustration of systematic and economic botany and forestry, would be of great benefit to the people of the state, especially to teachers of our public schools, to farmers, nurserymen, fruit growers, florists, and to medical students. In such establishment the Ohio State Horticultural Society will take the deepest interest, and it desires respectfully, but earnestly, to commend the subject to the trustees of the state university and to the general assembly.

I hope that you will urge the trustees of the university to ask the legislature for an appropriation for this purpose. No argument is needed to show the importance and necessity of such an adjunct to the department.

The appropriation of $250 has been expended as follows: $60 for fitting up herbarium cases and making some minor repairs about the building, $40 for new tables in the green house. The balance has served to purchase a considerable stock of botanical paper for mounting and preserving specimens, a set of chemical reagents for laboratory use, a pair of scales, and an assortment of horticultural tools, besides some miscellaneous supplies for the use of laboratory students.

As secretary of the school of agriculture and veterinary medicine, I am gratified to

report a continued increase of students in these courses. The number enrolled the present year is greater than ever before in the history of the institution.

I respectfully suggest that the "free scholarship" in the short course in agriculture be extended so as to allow one student to come from each county each year. This will serve to keep the offer before the public continuously, and if the matter is thoroughly advertised, and the appointments based upon a free and fair competition, I have no doubt the opportunity will be generally improved by those who could not otherwise secure the advantages of the university.

The experiment station continues to be a valuable adjunct to the department as a means of illustration and training. It offers excellent facilities to the students in horticulture for personal observation and original research.

The calls to attend horticultural meetings, farmers' institutes, and the like, are many and urgent. Whenever possible I go and take part in these meetings, although many invitations must be declined.

At the meeting of the State Horticultural Society in Columbus last winter, each member of the class in special horticulture read a carefully prepared paper. These were well received by the society, and are published in the annual report. It is needless to add that the class was greatly encouraged and stimulated thereby.

SPECIAL NEEDS OF THE DEPARTMENT.

The following summarizes the special and imperative needs of the department:

For the museum	$500 00
For laboratory equipment (microscopes, etc.)	300 00
Azoux models, maps and charts for class room	300 00
Horticultural equipment—tools for student labor on grounds and in garden	100 00
Total	$1,200 00

Respectfully submitted.

WILLIAM R. LAZENBY,
Professor of Botany and Horticulture.

Ohio State University, October, 1890.

GENERAL AND APPLIED CHEMISTRY.

COLUMBUS, O., *September* 1, 1890.

To the President of the University:

DEAR SIR: I have the honor to present herewith this, my seventeenth annual report of the department of general and applied chemistry.

During the past year there were enrolled in the class of inorganic chemistry, first term, 108; second term, 98 students; of organic chemistry, 58; in qualitative analysis, 18; in quantitative analysis, 7; in special work, 1; in organic analysis, second term, 4; in toxicology, third term, 4. Total 138—none counted twice. The last two classes, mostly of students in pharmacy, were taught by Mr. Keffer, the others by myself, except in one week of enforced absence, when my place was filled through the kindness of Professor Curtis C. Howard.

The work of the year was carried on under many and great disadvantages, the greatest of all being insufficient apparatus and an ill-ventilated laboratory. It is due to all the students to say that they accepted the situation cheerfully and accomplished as much work as could reasonably be expected of them under the circumstances.

The class in inorganic chemistry is made up mostly from the first year students of the college; the class in organic chemistry from the same, except those who elect mathematic in the freshman year; the laboratory students from those who have passed in these two classes above named, and mainly from those who elect this work. The inorganic chemistry is studied through the first two terms, meeting four times each week the first term and two times each week the second term. The organic chemistry meets four times each week during the third term. The text-book used is Norton's Elements of Chemistry, and instruction is given by lectures and a full course of experiments. Frequent mid-term written examinations are given at somewhat irregular intervals, generally without previous notice, and the work of the students tested by these and by the final examinations. Although the lectures follow closely the text-book, which is continued and finished in the year, they are not confined to it, as large additions are made to the subject matter in numerous topics relating to arts, manufactures and the application of the principal facts of chemistry to the concerns of daily life. I give as much as I can of these in the time allotted to me by the vote of the faculty of the university. I missed during the past year the large stock of specimens and illustrative material that I have been collecting during the past sixteen years and which were consumed in the burning of the old laboratory, and invite assistance in replacing them. We have already been favored with a complete series of petroleum products from the Standard Oil Company of Cleveland; of gunpowder from the Miami works of Dayton; of glass from Whitall, Tatum & Co. of Philadelphia; of steel making from the Otis Steel Co. of Cleveland; besides other minor contributions. In view of the assistance which such collections give to the student, as well as to the interest which almost every one takes in chemistry, I respectfully suggest that a sufficient sum of money be devoted to the purchase of other important collections and individual specimens, as opportunity offers.

Respectfully submitted.

SIDNEY A. NORTON.

CIVIL ENGINEERING.

To the President of the University:

DEAR SIR: I have the honor to submit my report for the department of civil engineering for the year ending June 25, 1890.

The number of students enrolled in the several classes of the department during the year was 87. They were distributed as follows:

Fall term, 1889—	
Sophomore, land surveying	19
Junior, topographical surveying	4
Senior, civil engineering	5
Senior, plans and specifications	2
Total	30
Winter term, 1890—	
Short agricultural field measurements	9
Junior, stereotomy	8
Senior, civil engineering	4
Special drawing	1
Total	22

Spring term, 1890—

Sophomore, railroad surveying	18
Junior, strains in framed structures	6
Junior, technical drawing	6
Senior, sanitary engineering	2
Senior, plans and specifications	2
Special drawing	1
Total	35
Total for the year	87
The number of different persons instructed during the year	37

Yours respectfully,

C. N. BROWN,
Professor of Civil Engineering.

November 18, 1890.

DRAWING.

To the President of the University:

DEAR SIR: I respectfully submit the following report of the department of drawing for the year ending June 25, 1890:

The number of students enrolled in the several classes was as follows:

Fall term—

Freehand drawing, Freshman	35
" Sophomore	23
Projection " "	24
Special drawing	2
Total	84

Winter term—

Freehand drawing, Freshman	32
" Sophomore	29
Descriptive geometry "	26
Total	87

Spring term—

Freehand drawing, Freshman	23
" Sophomore	25
Shades, shadows and perspective, Sophomore	19
Lettering, Freshman	39
Total	106
Total enrollment	277

The work of the year was satisfactory, as it was possible to give more attention to the individual needs of the students by having assistance in the work. This needed attention could not be given by any one person with the number enrolled, because it is a subject in which the instruction must be for the greater part individual.

To Mr. J. R. Taylor credit is due for his efficient and faithful service.

Some disadvantage was experienced in carrying on the work in mechanical drawing and lettering, owing to the number of students being greater than the number of tables for that work.

The additions to the department during the year were some very valuable studies in charcoal and crayon, oil color, water color, a few fine plaster casts and eight easels.

Without repeating them I respectfully call your attention to the suggestions offered in my last report in reference to the time allowed the subject of drawing, and provision whereby students could pursue the subject further than at present, possibly by establishing a short course in drawing leading to a certificate.

I hope that the need of extending the scope of the department will be recognized in the near future, and to go with this a museum of art. This museum would also be invaluable to other departments of the university. Although it has appeared in several of my reports I wish to renew the request for facilities to give instruction and practice in "blue printing" to the students in the engineering courses.

Many of our students commence their active work, after leaving the university, in draughting departments of companies or corporations, and in all of them the working drawings are sent out to the workmen as "blue prints," the tracings from which they are made always remaining in the draughting departments. It seems to me that the students of those courses should be given the benefit of this universal practice, as we try to make our instruction practical as far as it is possible.

With this request I wish to couple another which is closely related to it; the facilities of one would answer in part for the other; that is, provision to give instruction in photography to the students of science and engineering.

Science is a great gainer by the use of instantaneous photography, as certain phenomena can be photographed and studied at leisure, which it would be impossible to record or measure by the eye. In other cases observations and records can be made by this process in a few seconds which would require a week or longer by the eye, and in many cases have to be left undone. By this means also investigations which require the use of the spectroscope and microscope are possible to a far greater degree than they could be otherwise. It is used to register the changes in phenomena in all kinds of laboratory investigation, saving always much time to the patient observer. It is used by engineers to record the progress of structures and to preserve a graphic history of the successive stages of their construction, which can be used for students of engineering. If the engineer is not on the spot, as is often the case, photographs are taken of the work as it progresses and sent to him, and in this way he is able to judge of his work very satisfactorily. Astronomy is receiving more valuable aid from photography than any one branch of science. By its use it is possible for one observer to accomplish more at present than many could formerly.

Many of the best educational institutions are giving to this subject the attention it deserves, and it seems proper that this one should follow so worthy an example.

Yours respectfully,

J. N. BRADFORD,
Assistant Professor of Drawing.

November 5, 1890.

ENGLISH LANGUAGE AND LITERATURE.

To the President of the University:

DEAR SIR: I have the honor to submit this, my second annual report of the department of English language and literature.

The enrollment in the various classes for the year ending June 25, 1890, was as follows:

	1st term.	2d term.	3d term.
First Preparatory, (grammar, 5 hours per week)	28		28
Second " composition, 1 hour "	53	46	47
Freshman class, rhetoric, 2 hours, "	100	94	79
Sophomore class, literature, 2 hours "	35	35	25
Junior class, masterpieces 2 hours "	18	18	15
Sophomore rhetoricals, 1 hour "	61	47	49
Junior " " "	25	30	26
Totals...	320	270	269

The whole number of students in the department (no name counted more than once) was 301. It will be seen that there was a large increase over the enrollment of last year. This is particularly noticeable, and gratifying to the department, in the cases of the Sophomore and Junior classes, in which the work is elective for one or all courses, and which have nearly doubled their membership in one year.

The most pressing needs of the department are, (1) another instructor, and (2) more books for the English department of the library.

A greater number of students receive instruction in the English department than in any other department of the university; and further, the work of this department, even with an equal number of students, is more laborious than that of any other department, owing to the great amount of manuscript to be examined. During the past year I examined 11,250 pages of manuscript. No one who has never done such work can appreciate the amount of labor involved. It is a work, too, that can not be neglected without impairing the efficiency of the department.

Taking Harvard as the leading university of this country, we find that twelve instructors are assigned to work in the English department, while the greatest number of instructors in any other department is eight. Similar statements might be made of other leading institutions of learning. These facts are significant. It would seem as though the importance of English as a part of a liberal education should be recognized at the university in a practical way; and that would mean an additional instructor and more books.

The field of general literature is imperfectly covered by the books on hand. In many cases even the standard authors are lacking. There is no department that suffers more from a want of this kind than does the English department. Other departments may find material for study in the flowers of the field or the products of the mine, in the strata of the earth or the stars of heaven, but the study of literature is the study of books.

It needs no argument, I trust, to show that the work in English, especially the advanced work in literature and the masterpieces, must be pursued under very considerable difficulties and embarrassments until these wants are supplied.

I trust that it may not be deemed improper for me to recommend the organization of a department of elocution and oratory in connection with the English department. There is pressing demand for the work among the students, and to meet this demand would strengthen the influence of the English department both at the university and throughout the state.

Respectfully submitted.

JAMES CHALMERS,
Associate Professor of English Language and Literature.
Ohio State University, August, 1890.

FRENCH LANGUAGE AND LITERATURE.

To the President of the University:

DEAR SIR: I respectfully submit the following report of the department of French for the academic year ending June 25, 1890. The enrollment in the various classes was as follows:

	1st. term.	2d term.	3d term.
Freshman French	70	65	51
Sophomore French, B. Ph. course	6	6	5
Sophomore French, B. Sc. course	19	17	17
Junior French, elective	5	5	5
Total in department	100	93	78

I am very glad to be able to state that the scope of the department has been extended by the introduction of a course in Italian. A senior elective of two hours a week is now offered in this language, and is scheduled for the present year. I trust that arrangements will soon be perfected by which Spanish may also be admitted as an elective, and that in future years Italian and Spanish may be offered alternately to senior students.

I desire to call attention to the fact that, with the introduction of new electives, and more especially with the increase in the size of the classes in the first year's course, (Freshman French), comes the need of re-organization of these classes, and of increased aid in instruction. As constituted at present students with no knowledge of Latin are classed together with students of Horace and Juvenal. A re-arrangement should be made and the class should be divided on the basis of Latin and non-Latin students. Methods of teaching are applicable to the former which are not applicable to the latter. To effect this change, which I regard as an imperative one, assistance in the instruction will be indispensable.

Very respectfully,

B. L. BOWEN,
Associate Professor of French Language and Literature.

Ohio State University, October 1, 1890.

GERMAN LANGUAGE AND LITERATURE.

To the President of the University:

DEAR SIR: The following is the report of the department of German language and literature for the year ending June 25, 1890:

The number of students in First Preparatory German was as follows:

First term, 63; second term, 52; third term, 45; total number of different students, 67.

The work of this class was, for the first term, Otis's Grammar, 117 pp. (3 hours); Neue Anekdoten, 26 pp. (2 hours); Declension of nouns and adjectives, pronouns conjugation of auxiliary and regular verbs.

For the second term, Otis's Grammar finished, 83 pp. (2 hours); Irregular verbs, etc.; Neue Anekdoten, 50 pp. (3 hours).

For the third term, Neue Anekdoten, 8 pp. Deutschland, 117 pp. (5 hours).

This class is taught in two sections. The instruction consists in the study of grammar, reading and translating; half an hour each morning before regular hours was devoted last year to conversation. This exercise was, of course, voluntary both on the part of the instructor and of the pupils. The attendance and the results were satisfactory.

SECOND PREPARATORY GERMAN.

First term, 51; second term, 46; third term, 41.

The work was as follows: First term, Otis's Grammar reviewed, 200 pp. (1 hour); Die Braune Erica, 68 pp.; Die Harzreise 20 pp. (4 hours). Second term, Die Harzreise, 128 pp.(5 hours). Third term, Die Harzreise 46 pp.; Licht und Wärme, 96 pp. (5 hours).

This class is also taught in two sections.

The object in these preparatory classes is to enable the student to read scientific works with ease. In the short time allotted to this work this can be accomplished only by concentrating all efforts upon one point, viz: Reading. The essentials of grammar only are studied and as soon as possible the pupil is asked to translate accurately and rapidly. In the second year a great deal of extemporaneous translation is insisted upon. To give the student still further opportunity to require a perfect reading knowledge of German an elective, (2 hours) in special scientific reading is offered in the sophomore year of the course in science, open to students that have finished the two preparatory years. The number of students in this class the last year was seven.

The outline of the work in this elective is given below:

First term—E. Gerland, Licht und Wärme—finished.
A. Pinner, Einführung in das Studium der Chemie.
A. Wassmuth, Die Electrizität und ihre Anwendungen.

Second term—O. Taschenberg, Die Verwandlungen der Thiere.
Selections from Wiedemann, Electrizität, etc.

Third term—Selections from scientific periodicals.

The number of students taking the Sophomore elective in the courses leading to the degrees of Bachelor of Arts and Bachelor of Philosophy was—first term, 16; second term, 15; third term, 12.

During the first term this class had Brandt's German Grammar, Lodeman's exercises (3 hours), declensions, conjugation of regular and irregular verbs, 47 pp. Reading—Neue Anekdoten

During the second term the class studied syntax of nouns, pronouns, adjectives, numerals, pp. 50, and read Drei Novellen by Paul Heyse.

In the third term the work was Syntax of verbs and prepositions, 34 pp. and the reading of Freitag. Aus dem Staate Friedrich's des Grossen.

The aim of the instruction in this year is to give to the student a thorough knowledge of the principles of German Grammar and a fair reading knowledge in preparation for a more systematic reading of a history of German literature.

The class in the Junior elective German of the same courses was composed of sixteen students the first term, seventeen the second and fifteen the third. In the first term Brandt's German Grammar was continued one hour a week, pages of general syntax being studied. Kluge—Geschichte der deutschen Nationalliteratur was read two hours a week. One hundred pages were read. Kluge—Auswahl Deutscher Gedichte was also read.

In the second term the same work was continued and the history of German literature occupied one hour a week; and in the third term Kluge, Geschichte d. Deutschen Literatur and Auswahl Deutscher Gedichte were finished.

The work of the Sophomore and Junior years is intended to familiarize the student with the elements of German Grammar, to supply him with a fair reading knowledge, and to acquaint him with the principal facts of the history of German literature and to open his eyes to the beauty of German lyrics. He is now in a position to select for himself some period of German literature which can be studied more thoroughly. The greatest latitude in choosing special authors or a special period for independent criticism and study is given to the students in the Senior year.

Subject to later modifications the following series of topics have been laid down for the coming year:

First term—Der junge Gœthe—Gœthe's youth and his Storm and Stress period. Die Laune des Verliebten. Die Mitschuldigen. Götz von Berlichingen and Werther's Leiden.

Second term—Faust I and part of II.

Third term—Selections from "Das Nibelungenlied," in M. N. German version.

ERNST A. EGGERS,
Professor of the German Language and Literature.

GEOLOGY.

To the President of the University:

DEAR SIR: I herewith present my report for the department of geology for the last academic year.

The number of students enrolled in the several classes of the department during the year was 107. These students were distributed among the classes named below as follows, viz:

General geology, two terms, daily, elective by Seniors and Juniors	20
Economic geology, one term, daily, required of mining engineering students	1
Special students in paleontology	2
Elementary geology, one term, daily, required of Juniors in civil engineering and second year short mining course	8
Physical geography, one term, daily, required of second preparatory class, section A	31
Same, section B	45
Total	107

Deducting those counted twice in the enumeration, the total number of students taking work in this department during the year was 105.

The equipment of the department is increasing slowly but steadily; every year sees valuable additions made to the collection of minerals and fossils in the museum. We have now more than seven thousand specimens, numbered and catalogued. Much of our material is valuable; some of it can not be replaced at any price. A considerable number of type fossils, for example, that belong to it, in the nature of the case could not be duplicated. The loss of them would be irreparable.

I have been able, through a recent appropriation of the trustees, to add to the equipment of the department during the present term a lathe and saw for the preparation of thin rock sections, to be used in the determination mainly of the igneous rocks, and I shall regard with great interest the results of this work. Mr. George P. Grimsley, B. A., is employed for the present year as an assistant in the museum, and he is now engaged in the preparation of microscopic slides of such of the rocks of the Ohio scale as

require and justify examination of this sort. I desire to complete the equipment of the department in this direction so that our students shall be able to avail themselves of this latest and very important addition to the resources of geology.

I desire to secure more facilities for the teaching of physical geography, in the way of such relief maps and models as can be procured in the markets of the country, and for this purpose I should be glad to be authorized by the board to expend two hundred dollars ($200) during the present year. I hope that you will be able to recommend such an appropriation.

I come finally to the naming of a subject which I can not discuss at any length without resorting to the repetition of facts and arguments that have been presented in a number of my previous reports. I refer to the subject of a building for the geological museum. I hope that the time has come in the history of the university when this interest may receive the united support of the trustees, and thus be brought before the legislature under as favorable auspices as possible. I have recognized hitherto the urgent necessities of several other departments of the institution for the supply of facilities by which they could keep their place in the rapid development of the sciences which they represent, or attain for the first time the place that their practical importance demands. I also concede at the present time the equal claims that the library of the university can make, that it shall be properly housed and protected.

It has seemed possible to me that these two important interests of the institution might be united in their demands with profit to both, and that one set of walls and one roof might give house room and protection to both library and museum. The structure which each demands must be practically fire proof, and as to the floor space to be occupied, perhaps the requirements of the two interests are not far apart.

It would seem necessary to assign the lower floor of such a joint building to the geological museum, on account of the greater ease with which the weight of the material brought into it could be provided for; and also because the basement of such a building would necessarily be required for the department of practical geology. But aside from this consideration, I should even prefer the upper floor of a second story building on account of the possession of better light. The second story would not, I presume, be counted in any respect as unfavorable for library purposes. The museum and library could both be furnished in this way at less expense than if suitable buildings should be erected for each.

The museum building should, in my judgment, be constructed mainly of Ohio stone, and it should represent, so far as architectural demands would admit, the leading varieties of building stone which Ohio quarries are now furnishing to our cities and towns and to those of other states. I believe that the owners of many of the large quarries would take pride in having their products represented in so conspicuous a building as this would be, and in which the peculiar excellence of each stone would be sure to be brought out. I should expect that considerable contributions could be secured from the sources above named towards the erection of such a building. A museum building practically fire proof would be almost sure to attract at once collections of greater or less value that are now held in private hands throughout the State. There is, to my knowledge, one instance in which the university, by reason of its central location, would be counted as the most natural and possibly the best destination for a large and extremely valuable collection of fossils, mainly derived from the rocks of Ohio, *provided* that the university could offer proper security to the collection. Until such offer can be made, however, the transfer would not for a moment be considered.

It is unnecessary to repeat the facts as to the value of the material which the university museum now contains. It would require a large outlay to get together as many minerals and fossils as we now possess. In such a collection, there are always unique specimens, the loss of which could not be made good by any expenditure.

If the plan to build a new museum takes definite shape so as to justify the outlay, I shall wish to visit four or five of the best arranged collections of the country before any plans are finally adopted, so that we may be able to avail ourselves to the full extent of

all the most advanced and successful experience in this line that is appropriate to our conditions.

Very respectfully,

EDWARD ORTON,
Professor of Geology.

Ohio State University, Columbus, O., October 20, 1890.

GREEK LANGUAGE AND LITERATURE.

To the President of the University:

DEAR SIR: I have the honor to submit my annual report of the work in the department of Greek for the year ending June 25, 1890.

The membership of the classes during the year was as follows:

Senior elective (ancient art)	6
Senior	6
Junior	6
Sophomore	14
Freshman	18
Total	50

It is gratifying to note that the shrinkage of class membership from term to term is diminishing. The six members of the senior class remained throughout the year and received the baccalaureate degree in arts at commencement, the same degree being also conferred upon one student who had finished the course in Greek with a previous class.

The work of the various classes for the year may be briefly summarized as follows:

My work for the year consisted of sixteen hours a week, divided as follows: Freshmen, 5 hours; Sophomores, 3 hours; Juniors, 3 hours; Seniors, 3 hours; Senior elective, 2 hours.

Very respectfully,

J. R. SMITH,
Professor of the Greek Language and Literature.

Ohio State University, October 6, 1890.

HISTORY AND POLITICAL SCIENCE.

To the President of the University:

DEAR SIR: I have the honor to submit the following report of the department of history and political science for the academic year ending June 25, 1890:

HISTORY A. (MEDIÆVAL AND MODERN.)

The number of students enrolled in this class first term, was 26; second, 26; and third, 24. This is a study of political and institutional European history. Myers'

Mediæval and Modern History was used as a basis during the first and second terms, and completed. Selected chapters from Fisher's Outlines of Universal History, Hallam's Middle Ages, Bryce's Holy Roman Empire and Lodge's Modern Europe, and other representative authors were required to be read in connection with the text. An introductory lecture was given on historical methods, and special lectures from time to time as the topics occurred in the text or were suggested by it on causes of the fall of Rome, migrations of the Aryans, ethnological condition of Europe after the great immigrations, the rise of the Roman hierarchy, the karlings and the bishops of Rome, the feudal society, reflex influence of feudalism and the church, the quarrel of investitures, the influence of Mohammedanism on European history, the Normans in Europe, the crusades, the communes of France and the cities of Germany and Italy, the effect of the Reformation on the state system of Europe, etc.

A part of each hour was usually devoted to a lecture on topics parallel with the text book, and the rest to an oral recitation on an assigned portion of the text, the references and the lecture of the preceding hour.

During the third term special attention was given to the development and decay of the state system of Europe and to the rise of administrative ideas, Wilson's The State, or Historical and Practical Politics, being used as a text. A comparative study of federal constitutions was made with a view to showing their similarity and dissimilarity to the constitution of the United States. The chapters and topics covered in The State were :

I. The probable origin of government.
II. The probable early development of government.
IV. Roman dominion and Roman law.
V. Teutonic polity and government during the middle ages.
VI. The government of France.
VII. The government of Germany.
VIII. The government of Switzerland.
X. The government of England.
XII. Summary: Constitutional and administrative developments.
XIII. Nature and forms of government.
XV. The functions of government.
XVI. The objects of government.

Some chapters were omitted for want of time, and others because they were discussed in other courses. Written recitations by topics were held at stated and convenient periods throughout the year. A comprehensive bibliography of representative authors was dictated to the student for present or future reference. This course proved highly beneficial to the student giving him a knowledge which so few have of the development and practical workings of English and continental governments.

HISTORY C. (HISTORICAL SEMINARY.)

The number of students enrolled each term was five. This is a course of advanced investigation of historical, industrial, social and economic themes. The student chooses a subject and is directed to original sources such as documents, statistics, state papers and the like, and is required to work out his own results under the guidance of the professor. These results he embodies in a thesis at the end of each term. The small number of students enrolled in this study is due largely to the fact that being advanced work, it is open only to those fitted by ability and previous training to prosecute it. Some of the theses presented during the year were of exceptionally high character, and one or two were, in my judgment, worthy of being printed as monographs on the subjects treated.

Some of the topics investigated were:

I. History of the prominent political parties in the United States.
II. History and theory of land tenure in the United States.
III. Tariff and the farmer.
IV. Tariff and the wool-grower.
V. History and principles of the national banking system.
VI. The Australian ballot.
VII. Historical development of the federal judiciary.
VIII. Education in the American colonies.
IX. Co-operation in production in the United States.
X. Charity organization societies in the United States.
XI. Municipal government in Ohio.

THE CONSTITUTIONAL AND POLITICAL HISTORY OF THE UNITED STATES.

The number of students enrolled first term was 26; second, 25; and third, 25. The first term was devoted to lectures on colonial and constitutional history to 1789, with special attention to the development of the principles afterward embodied in the constitution as seen in the tendency of the colonies toward union, their struggle for independence, and the gradual formation of a national government. Parallel with the lectures the student was required to examine representative colonial charters and to read extensively from various authors on colonial and constitutional history. Oral recitations occupying a small portion of the hour were held at each meeting of the class and written recitations by topics, at convenient intervals.

In the second term the text of the constitution was studied, Cooley's Principles of Constitutional Law being used as a basis. Historical illustrations and details of cases cited were constantly given to supplement the book. The third term was devoted to the study of the political history of the United States from 1789 to the present time. Johnston's American Politics served as an outline, which was filled in by enlarging on important topics and theories. Special attention was paid during this and the preceding term to what may be termed unwritten constitutional law, or the expansion of the constitution by supreme court decisions. Oral recitations were held part of each hour and written recitations, by topics, at appropriate times. This course was emphasized as being of the highest importance to the general and special student.

POLITICAL ECONOMY.

Number of students enrolled first term was 20; second, 21; and third 21. During the first two terms Walker's Political Economy (advanced course), was followed as a text on which lectures, historical and critical, were given, part of each hour being used for lecture, and part for oral recitation and discussion. The aim of this work was to acquaint the student with the fundamental principles and the historical development of the science and to enable him to consider critically economic and industrial phenomena and to draw generalizations from such phenomena. This result presumably accomplished, the third term was devoted to the investigation of some practical economic and social problems, such as:

I. Industrial co-operation.
II. Pauperism.
III. State interference in charities.
IV. Charity organization societies.
V. The wage-fund theory.
VI. Trades unions and strikes.
VII. Knights of labor.
VIII. The Ricardian doctrine of rent.
IX. Nationalization of land.

X. Bi-metalism.
XI. Taxation.
XII. Socialism.
XIII. The tariff.

In the last subject the principles relating to the tariff, which had been treated in the text book, and discussed in the lectures during the first two terms, were summarized and developed, the history of the tariff from 1789 to the present time, studied from text book, and references to economic writers, and the articles on the tariff, which appeared in the North American from January to June, 1890, critically examined and discussed. Oral discussions were held hourly and proved of great advantage to the student in enabling him to form and express opinions.

INTERNATIONAL LAW, ROMAN LAW AND MUNICIPAL GOVERNMENT.

The number of students enrolled first term was 9; second, 9; and third, 8. The first half of the year was devoted to international law. Woolsey's Introduction to the Study of International Law was used as a text. Views at variance with the author's, and illustrations of the principles attained through usage, treaty and convention were given from Grotius, Vattel, Wheaton, Gallaudet, Bluntschi, Wharton's International Law Digest, and Treaties and Conventions between the United States and other powers, from 1776 to 1887. Oral recitations were held each hour and written recitations at appropriate intervals.

The students desired the substitution of Roman law for municipal government. This substitution was made in part. Morey's Outlines of Roman Law was used as a guide in the study of the development of the Roman polity and the transmission of the principles of Roman public and private law to mediæval and modern city and state governments, and of the elements of Roman law in modern jurisprudence. Frequent references were made to Maine's ancient law, Austin and Holland, as authorities on jurisprudence; to Hadley, Amos, Savigny, as authorities on Roman law, and to Bryce's American Commonwealth, Johns Hopkins' political science series, and other sources on municipal government.

SUMMARY OF ENROLLMENT.

The total enrollment of collegiate students in this department by terms, was, first term, 86; second, 86; and third, 83. The total enrollment counting the members of each class for the year, and not by terms, was 97. Deducting the number of names repeated in this enumeration, the total number of different students was 54. Of this total one was a post-graduate, fourteen were Seniors, twenty-three Juniors, four Sophomores, three Freshmen, six Specials, one First Preparatory, and two Irregular Preparatory. Considering that the courses in this department are open almost exclusively to Juniors and Seniors, and that the great majority of these two classes was enrolled, this number is extremely gratifying, Compared with former years, the enrollment shows not only that the number of students in this department has kept pace with the increased number in the university, but also that the number of those who elect the department is continually increasing.

PREPARATORY DEPARTMENT.

The preparatory classes in United States History and Civil Government were conducted by Mr. J. A. Wilgus. It does me good to express my approval of his methods, and my entire satisfaction of the results attained.

The classes were found so large that it was necessary to make two sections in each subject: United States History, section A, was taught in the fall term, daily, by means of recitations on the text (Johnston's "History of the United States"), supplemented

by notes and lectures, where amplification seemed advisable. Section B was taught in the same manner in the winter term. The number of students enrolled was, fall, 27, winter 24; in attendance was, fall 24, winter 23.

Civil Government, section A, was taught in the winter term by means of daily recitations on the text (Macy's "Our Government"), amplified by notes and lectures. Section B was taught in the spring term in the same manner, using Thorpe's "Government of the People of the United States," instead of Macy. The number of students enrolled was, winter, 30, spring, 23; in attendance was, winter 29, spring 23.

It may not be improper to make public acknowledgment here of the large amount and high character of the work done by Alberta D. Garber, Ph. B., for the master's degreee conferred on her, June, 1890.

The action of the board of trustees in bringing to this department, and to the whole university, so eminent and scholarly a lecturer as Dr. Bascom, is highly commendable. The custom of importing lecturers, so largely followed in colleges and universities further east, has proved to be of so great advantage in creating and maintaining a university spirit of advanced research, and of inspiring both student and professor, that all are to be congratulated on its introduction into the Ohio State University. Dr. Bascom's lectures were very superior and thoroughly appreciated.

Finally, I would say that I was much pleased with the serious and energetic character of the student body, and the thoroughness of their preparation for my work, that my connection with the Ohio State University, as acting professor of history and political science, was very enjoyable and beneficial to myself, and that I shall always retain a warm interest in all that pertains to the university and its advancement.

Respectfully submitted,

JOHN WAHL QUEEN,
Acting Professor of History and Political Science.

Princeton, N. J., October 17, 1890.

LATIN LANGUAGE AND LITERATURE.

To the President of the University:

SIR: I have the honor to submit the following report of the department of Latin for the college year ending June 25, 1890.

The enrollment of students by classes and terms was:

	Fall.	Winter.	Spring.
First preparatory	25	29	24
Second preparatory	21	18	16
Freshmen	37	23	20
Sophomores	18	16	14
Juniors	15	13	12

The efficiency of the department would be largely increased by the addition of a few books of reference to be kept in the recitation room. Kiepert's excellent new wall-map of ancient Germany, a wall-map of ancient Britain, a better plan of ancient Rome, a very few bronze Roman coins, small specimens of the marbles and other building materials used at Rome and other famous cities marked by Roman architecture—these would be of much value and could, probably, be procured with an additional appropriation of fifty dollars.

The completion of Mr. J. A. Wilgus's term of service as assistant in this department makes it proper to express in this place my appreciation of his valuable aid and cordial co-operation.

Respectfully submitted.

SAMUEL C. DERBY,
Professor of Latin.

Ohio State University, September 11, 1890.

MATHEMATICS AND ASTRONOMY.

To the President of the University:

DEAR SIR: I present herewith my report in the department of mathematics and astronomy for the year ending June 25, 1890.

The work has been carried on by Lieut. Charles E. Kilbourne, Professor of Military Science, and Ass't Professor of Mathematics, Ass't Professor Geo. W. McCord, and myself.

The following table exhibits the organization of classes, the number of students enrolled in each and the number of meetings a week:

Term.	Class.	Subject.	Instructor.	Number of students.	Number of meetings per week.
1889. Fall.	I. Preparatory { section A	Elementry Algebra	Kilbourne	29	5
	" section B	"	"	24	5
	II. Preparatory { section A	Plane Geometry	McCoard	30	5
	" section B	"	"	30	5
	" section C	"	"	24	5
	Freshman { section A	Analytic and Spher. Trigonometry	Bohannan	31	3
	" section B	" " "	McCoard	24	3
	Sophomore	" Geometry	Bohannan	35	5
	Junior	Least Squares	"	5	3
	" (elective)	{ Analytic Geometry of three dimensions and advanced Calculus }	"	2	{ 3 / 2
	Totals			234	44
1890. Winter.	I. Preparatory { section A	Elementary Algebra	Kibourne	28	5
	" section B	"	"	25	5
	II. Preparatory { section A	Solid Geometry	McCoard	23	5
	" section B	"	"	29	5
	" section C	"	"	28	5
	Freshman { section A	{ Higher Algebra and Theory of Equations	Bohannan	38	3
	" section B		McCoard	31	3
	Sophomore	Differential Calculus	Bohannan	27	5
	Junior	Methematical Astronomy	"	1	3
	" (elective)	Advanced Calculus	"	1	3
	" "	"	"	1	2
	Totals			232	44

Term.	Class.	Subject.	Instructor.	Number of students.	Number of meetings per week.
1890. Spring.	II. Preparatory { section A	Plane Trigonometry	Kilbourne	33	5
	II. Preparatory { section B	"	McCoard	32	5
	II. Preparatory { section C	"	"	27	5
	Freshman { section A	Analytic Geometry	"	40	3
	Freshman { section B	"	"	22	3
	Sophomore	Integral Calculus	Bohannan	27	5
	Junior	Mathematical Astronomy	"		3
	" (elective)	Advanced Analytic Geometry	"	4	3
	" "	" Calculus	"	1	3
	" "	" "	"	1	2
	Senior	Descriptive Astronomy	"	15	5
	Totals			202	42
	Total enrollment 1889-90			668	

I would again urge the necessity of providing a small working observatory, with such instruments as are necessary to equip it, for the department of astronomy. An observatory is as necessary to the study of astronomy, as is a laboratory for physics or chemistry. The last year has seen these departments liberally provided for. May we not now hope that the departmenf of astronomy shall not longer wait for that modest equipment it has so often asked in vain?

In this connection, allow me to call your attention to the fact that additional teaching force seems to me necessary for this department. The growth of the department in the last five years has more than kept pace with that of the university, as the following table will exhibit:

	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.
Enrollments	430	482	529	580	668
No. of students, (none counted twice)	172	196	217	263	308

Thus has the number of students in mathematics nearly doubled in five years, while the enrollment has increased over fifty per cent. The teaching force has remained practically the same. When Mr. McCoard was allowed a year ago, to give up his classes in Latin, to devote his whole time to mathematics, his geometry class had reached such size that it was necessary to divide it into three sections. He now gives fifteen hours a week to instruction in geometry. Thus during two terms of the year he has time for only one section of the freshman class. It seems now imperative to make three sections of the classes in preparatory algebra and preparatory geometry, and the freshman class. Under our schedule, many who are freshmen in mathematics, are more advanced in other subjects, and are in the laboratories in the afternoon. It thus does not seem possible to multiply the number of classes under our present teaching force. The popularity of the new course in electrical engineering will bring additional numbers to the mathematical classes, and the freshman class in 1890-91 of this department, will probably reach 90 members.

I would suggest, therefore, that in case an appropriation is made for an observatory and equipment, an additional assistant in mathematics be appointed for 1891–92—*one who has made practical astronomy a specialty*—that he may also act as assistant in the observatory. A suitable man could probably be secured for $1,000 per annum.

In view of Mr. McCoard's long, and faithful, and efficient services in the university, I would suggest that an increase of his salary would be an appropriate recognition of his merit. He teaches 18 hours a week, which is not far short of the time devoted to instruction by any other servant of the university.

The method of instruction in this department is the careful study of an approved text-book, with full oral explanations of such difficulties as, in the experience of the teacher, are likely to beset the average student, and of such personal difficulties as come under the notice of the instructor. Such additions to the subject matter of the text-books as the instructor may desire to make, are written upon the blackboard.

As often as may seem necessary, brief talks are given to present to the student connected views of the subjects under study, their relations to other branches of mathematics and their applications. Vast numbers of problems are solved, to familiarize the student with the principles of the texts. It is the experience of the head of this department that much more can be accomplished in teaching elementary mathematics, or the elements of any mathematical subject, by the use of a suitable text-book than by lectures or blackboard notes alone. Only the very brilliant can catch a mathematical

truth when tossed to him orally. In giving blackboard notes, there is a strong tendency to sacrifice clearness to brevity. The art of book-making has now reached great perfection, and I find that I can accomplish far more by making a suitable text-book the basis of a course, than by consuming a large part of the student's time in the manual labor involved in transcribing notes.

Wells' Trigonometry is to be replaced by Lock's Trigonometry in 1890–91.

I am, sir, with great respect, your obedient servant,

R. D. BOHANNAN,
Professor of Mathematics and Astronomy.

MECHANICAL ENGINEERING.

COLUMBUS, *October* 23, 1890.

To the President of the University:

DEAR SIR: The following report of the department of mechanical engineering for the year ending June 25, 1890, is herewith presented.

The students enrolled in the various classes were as follows in numbers:

First term—	
Mechanical laboratory	25
Analytical mechanics	5
Mechanism	6
Design drawing and invention	7
Thermodynamics	2
Total	45
Second term—	
Mechanical laboratory	33
Mechanism	3
Analytical mechanics	5
Prime movers	2
Total	43
Third term—	
Mechanical laboratory	23
Mechanism	3
Strength of materials	4
Technical drawing	7
Machinery and mill work	2
Total	39

The number of students in attendance in the mechanical laboratory classes was much larger than ever before, necessitating additional teaching force, which fortunately was timely provided in the employment of Mr. A. D. Haines, who has rendered efficient service during the year. At the present rate of growth the work of the department will soon overreach the capacity of our building and appliances. This fact would indicate good fortune in the early establishment of a manual training school, which could work in reciprocal relation with the mechanical department. In this connection I would suggest introducing into the preparatory department at least one or two terms of manual training, and requiring of students who enter as freshmen, one or two terms, so that all students, who graduate, will have taken the training sufficiently to enable them far

better to understand and estimate the value of such mechanical appliances and products as they will most surely be brought in contact with in after life.

In the school of manual training it would doubtless be advisable to introduce simpler exercises than those now employed in the mechanical laboratory where the object is a somewhat special training in the line of machinery and its production.

But whatever may be done respecting the manual training school it is needful already that more assistance be provided for the practical instruction than we now have even with the addition of Mr. Haines. Since the opening of the present year it has been necessary to divide the class into two sections, one coming as before on Monday and Tuesday, while the second comes later in the week. As Mr. Bradford's assistance is all confined to Monday and Tuesday, the instruction is unevenly divided between the sections, and it seems necessary to rearrange the program of recitations in order to make a change in the distribution of Mr. Bradford's time given to the department; and besides this it is desirable that some of the assistance be given especially to wood-work, some to iron-work, some to smith-work, etc. The difficulty in finding a teacher who can render efficient service in all branches of the work done is considerable. An assistant especially well qualified in wood-work is extremely desirable. In view of these facts it would seem to be a thoroughly practical and judicious thing to employ an assistant in wood-work who could, in "off time," or in the absence of classes, do such work as is required to be done for the university, the amount of which is considerable and in nearly constant demand. I would respectfully ask candid consideration of this question, and the allowance of such assistant and wood-worker, if possible. In addition to what has been said it is not unlikely that in the near future Mr. Bradford's time will all be demanded in the drawing room, when the assistance above pointed out will become the more needful.

S. W. ROBINSON,
Professor of Mechanical Engineering.

October, 1890.

MILITARY SCIENCE AND TACTICS.

To the President of the University:

SIR: I have the honor to submit the following report for the year ending June 25, 1890:

The number of cadets at the beginning of the college year was two hundred and thirty-five. A battalion of four companies of infantry, a battery of artillery and a band were organized without delay. Instruction in infantry and artillery tactics continued throughout the year. The class in sophomore civil engineering, and all non-commissioned officers were instructed in military signaling. Unless excused for special reasons, all commissioned officers and sophomores were required to recite during the winter and spring terms in Hamilton's Art of War, and the non-commissioned officers and freshman received theoretical instruction in tactics. During the year thirty cadets were under instruction in the art of war, and eighty-eight in tactics. The captains of the companies acted as instructors under the immediate supervision of cadet Lieutenant-Colonel J. E. Thompson. Cadet-Major L. F. Kiesewetter had charge of the practical instruction whenever I was absent hearing recitations. The course in tactics covered the school of the company and the important battalion movements.

The theoretical instruction has never been satisfactory, and never will be until the military department is placed upon the same footing as the other departments of the university. Every student who enters the battalion should be required to pass a satisfactory examination in the course of military instruction before being graduated. I

recommend that text-books be adopted on the recommendation of the military professor and that a sufficient number be purchased for the use of the battalion, the books to be in charge of the military professor and issued to cadets in the same manner as rifles, etc I renew my recommendations that an appropriation be obtained for a drill hall and armory; that action be taken to make the battalion a part of the National Guard of Ohio, and that overcoats be adopted as part of the uniform of the cadets.

The annual prize drill took place June 14, 1890. Capt. Geo. S. Wilson, 1st Lieut. F. K. Smith and 1st Lieut. A. Reynolds of the army acted as judges. The first prize, the prize sword of 1886, was won by Company "B," Capt. S. C Kershaw, and the second prize by Company "C," Capt. R. S. Goodell. Only three companies competed as it was not thought fair to allow the picked company, "A," Capt. E. Sigerfoos, to enter the contest. Adjutant-General M. L. Hawkins presented the first prize and Governor J. E. Campbell the second prize.

Company "A," Capt. Sigerfoos, entered the competitive drill at Portsmouth, O., July 4, and won the first prize of $500, over companies from Springfield and Avondale. The drill of the company was highly creditable, the percentage being ninety-eight. I desire to acknowledge the courteous treatment and cordial support I have received from you and from the other members of the faculty during my tour of duty at the Ohio State University.

Very respectfully, your obedient servant,

C. E. KILBOURNE,
First Lieutenant Second Artillery.

Ohio State University, September 26, 1890.

MINING AND METALLURGY.

President W. H. Scott:

DEAR SIR: I respectfully submit the following report of the department of mining and metallurgy:

The number of students in the classes of this department for the year ending June 25, 1890, was as follows:

Metallurgy, 6; metallurgical laboratory, 5; assaying, 5; mineral chemistry, 4; determinative mineralogy, 3; Freshman mineralogy, 65; short course, algebra, 11; mine surveying, 2; ventilation and haulage, 4; mine operating, 3; total number, 108.

We are now occupying the east wing of the new chemical building, the basement and first floor of which are taken up with my classes while those under the charge of Prof. Sperr are on the second floor.

The accommodations in our new quarters are ample and the arrangements highly satisfactory.

There are two classes of work belonging to the department; that of the regular course leading to the degree of mining engineer and that of the "short mining" course, which was established two years ago. The latter work is elementary in character and especially adapted to the class of students it invites—young men of practical experience in mines but of limited education in school work. This course has proved quite successful; a number of young men from the mines are in attendance, who show a gratifying enthusiasm, and make very satisfactory progress in their studies.

These men require somewhat different instruction from regular college students and we find that they are best taken in separate classes.

There has been a steady demand for our students, and they have proved in practice the success of the methods of instruction.

It is hoped that as the short course becomes known the attendance will steadily increase.

Very respectfully,

N. W. LORD,
Professor of Mining and Metallurgy.

PHARMACY.

To the President of the University:

DEAR SIR: I present herewith the annual report of the department of pharmacy for the year 1889–90.

The work of this department for the year has been carried on in the temporary laboratory fitted up for its accommodation in the horticultural building, the same room having been used both as a lecture room, and for working laboratory. This use of the room was made necessary in order to accommodate the department of agricultural chemistry, after the burning of the chemical building, and was the cause of considerable confusion and some clashing of interests between the classes.

The number of students enrolled in this department during the year was twenty-one, which, with two from the veterinary department, made a total of twenty-three to receive instruction. Of this number thirteen occupied desks in the laboratory, and as it will accommodate but sixteen, it was, especially during the lecture hour, over-crowded.

The text-book in use is Remington's Practice of Pharmacy, with the U. S. Pharmacopœia and dispensatories in constant use as works of reference. The text-book is not followed closely, but its classification of officinal preparations is accepted, and, as it contains the general working formula of the U. S. Pharmacopœia, it is used also in the laboratory.

The course is three years in length. The first year being in fact one of preparation, is devoted to the study of Latin, chemistry, botany and physics. Instruction in pharmacy does not begin until the second year.

During the year not much progress has been made in the collection of specimens, but little effort having been made in this direction, as it was thought best to defer this work until such time as a place might be open for their proper reception. We have, however, received from Messrs. Powers & Weightman, chemists, Philadelphia, Pa., an elegant cabinet, containing a display of chemicals and pharmaceuticals, which will be quite an addition. The thanks of the department are due this firm for their generous donation.

Three students were graduated at the end of the year. With one exception these have been successful before the Ohio State Board of Pharmacy and are registered pharmacists. Several students in the lower classes have also been successful in their examination before the State Board. As recommended in the last report, we would again recommend, that the work in pharmacy be added to the list of elective studies in the courses of arts and philosophy, it being work of great value to any student who contemplates the study and practice of medicine.

In conclusion, I wish to say that the work for the year has resulted well, and that having proven the success of the department with such limited accommodations, there can be no question that in the future, with its greatly improved facilities, its success will be far greater.

Respectfully submitted.

GEO. B. KAUFFMAN,
Associate Professor of Pharmacy.

PHYSICS.

To the President of the University:

DEAR SIR: The following report of the department of physics for the year ending June, 1890, is respectfully submitted:

The number of students enrolled in the several classes was as follows: In the second preparatory class, 90; in the sophomore class, 41; in the junior class, 2; in the senior class, 3; in the physical laboratory, 22; total enrollment, 158. Deducting those twice counted, the number of individual students was 146.

The work of the preparatory and sophomore classes was the same as that regularly done heretofore. The junior class studied electricity, using Cumming, and Marcart and Joubert, under Mr. Whitney's instruction, and continued their course in the physical laboratory. This is the regular junior work of the course in electrical engineering. The senior class work consisted of lectures on the theory, design and use of dynamo-electric machinery and other topics of importance to electrical engineers, together with practical instruction in the electrical laboratory.

The class was formed and instruction given at the request of the three seniors in the course in mechanical engineering, there being no seniors in the electrical engineering course.

The last named course was opened as a regular course for the first time at the beginning of the year covered by this report. I am unable to state the number of students enrolled in it, as no separate classification of them was made in the college enrollment. The number is, however, certainly greater than I expected the first year. The course has attracted attention from all parts of the country, and is sure to bring us an increased number of students.

The new electrical laboratory building was completed during the first term of the year, the machinery and apparatus put in working order as needed, and freely used during the balance of the year with the senior class. The equipment has proven quite satisfactory to the students and myself, and enables us to do experimental work and give practical training of a high order.

There have been no important additions to the apparatus of the department during the year, the means allowed us being only sufficient for current expenses, and the purchase of minor pieces needed. Since my connection with the university, the demand for instruction in electricity has been such as to compel me to use the funds provided in the purchase of apparatus for that work. The rapidly increasing number of students in electricity makes it necessary to continue such expenditure in the duplication of pieces already purchased, and in obtaining other needed pieces. It is time also for us to extend the equipment for the general course in science, which has been partially neglected for the reason above stated. For this purpose alone we ought to have at least $3,000 this year. The number of students turning their attention to science, either as a general training or for the purpose of fitting themselves for work as teachers of science, is increasing, and they desire and need facilities for work in certain lines not now provided for.

Mr. Wadsworth resigned his position as assistant in the department in September, to accept a fellowship at Clark University, Worcester, Mass. He has since been made assistant in physics there, and is aiding Professor Michelson in his important researches in light. To fill the vacancy caused by Mr. Wadsworth's resignation, Mr. R. D. Mershon, a senior in the mechanical engineering course, was employed, and he did excellent work with a section of the sophomore class during the second and third terms. At the close of the year he was chosen assistant in the department.

At the present time, the number of students engaged in the work of the department is greater than ever before, and the number enrolled in lower classes in courses leading

them through this department is such as to show a continued increase. There are now over thirty students in the laboratory, and the difficulties experienced from overcrowding, stated in former reports, are felt in increased degree. A year hence we shall have probably forty-five or fifty in the laboratory, with correspondingly increased trouble.

The question of proper accommodations for the work of the department is becoming a serious one, and I respectfully request its early consideration by yourself and the board of trustees.

Very respectfully,

BENJ. F. THOMAS,
Professor of Physics.

Ohio State University, October, 1890.

VETERINARY MEDICINE.

To the President of the University:

SIR: The past year has been a prosperous one for the veterinary department, notwithstanding that it had been severely damaged and almost crippled the year before by the burning of the chemical laboratory building, which deprived my classes not only of a class-room, but also of nearly all means of instruction, such as skeletons, other anatomical preparations, instruments, a dispensary, etc. Through the kindness of Mr. Chas. E. Thorne, director of the experiment station, my classes have been provided with a room in the station building, and the means of instruction, with the exception of the cases, utensils and stock of the dispensary, have been more than replaced by an appropriation of the board of trustees.

Four students, who did their thesis work under my supervision, graduated last June, and at the present writing fifty-eight applications for admission to the veterinary department have been received. Of course, I do not expect that every one who has inquired about the requirements for admission, etc., will come or be able to enter, but I do expect that in consequence of the better facilities offered next year, and made possible by the appropriation of five thousand dollars for a new building, and a little advertising, by which this fact was brought before the public, the number of new students in the department will be a comparatively large one.

During the past year the undersigned has taught the following classes: 1. In the fall term, one five-hour class of seven students in pathology and therapeutics, (infectious and contagious diseases); one five-hour class of two students in surgical diseases and operations; and one daily class of nine students in veterinary practice (clinic). 2. In the winter term, one five-hour class of seven students in infectious and contagious diseases; one five-hour class of two students in surgical diseases and operations; and one daily class of nine students in veterinary practice (clinic). 3. In the spring term, one five-hour class of seven students in infectious and contagious diseases and forensic veterinary medicine; one five-hour class of four students in veterinary obstetrics, and during the latter part of the term in toxicology; one one-hour class of four students in bacteriology; and a daily class of nine students in veterinary practice (clinic).

All the five-hour classes, and to a certain extent also the one-hour class in the spring term, were taught by lectures, no text books being used. The books recommended for home study, comparison and reference are: 1. In pathology and therapeutics, Robertson, Williams and Gresswell, and for students who understand German, Roell, Dieckerhoff and Froehner. 2. In surgical diseases and operations, Williams and Fleming, and in bacteriology, Hueppe.

Veterinary anatomy, or rather comparative anatomy of domestic animals, was taught

by my assistant, Dr. W. F. Lavery, to a class averaging eight students. It is a three-hour study in the fall and spring terms, and a five-hour study during the winter. It ought to be a five-hour study the whole year. Dr. Lavery also directed the dissecting exercises in the winter. Instruction is given mainly by lectures, though Chauveaus' Comparative Anatomy, translated by Fleming, is constantly used as a guide. Eight horses were killed for anatomical purposes. Next winter, in consideration of a much larger class, more horses will be needed. To be able to buy them, and also to procure some other things that are necessary an appropriation of fifty dollars ought to be granted.

The material for instruction has been essentially increased during the past year. Three skeletons, one of a cow, one of a horse and one of a camel, and quite a number of anatomical and pathological preparations, all prepared by students, have been added. Drs. Lavery and Brier also made a very fine skeleton of an ostrich, which is yet their property. I recommend that it be procured for the veterinary department. The price asked is $60.00.

The study of bacteriology, which of late has developed to one of the most important branches of veterinary science, requires more and better means of instruction than are at present available. The only means at my disposal consist in the bacteriological apparatus owned by the Ohio Agricultural Experiment Station, and a few rather insufficient microscopes which I had to borrow for each lecture from the Experiment Station, the department of botany, and the department of agricultural chemistry. The bacteriological apparatus of the Experiment Station, I have no doubt, can also be used in the future, but at least four good microscopes, equipped with first-class homogeneous immersion objectives and Abbe condensors, ought to be procured. The cost will be about $600.00. I therefore very respectfully ask for an appropriation of that sum for the purpose named. If this request is granted, as I hope and expect it will be, I recommend that the study of bacteriology be extended from one hour to three or even five hours a week, and be converted into a laboratory. Only in that way will the thoroughness of instruction, demanded by the rapidly increasing importance of the subject, be possible. A moderate fee, say $5 for the term, might then be charged for the wear of the instruments and the material used.

A fee, say $3.00 a term, might also be charged for the anatomical laboratory (dissection exercises) conducted during the winter term by Dr. Lavery, provided the university is willing to furnish the dissection cases, which at present are procured by the students themselves.

When the new veterinary building is completed, room will be provided for two advanced students, one of whom has to be there at all times except during class hours, so as to be able to receive patients. This, I confidently expect, will very much increase the patronage of our clinic. Although the number of patients that came to the clinic for examination and treatment during the past year was larger than the year before, it was not what it ought to have been, and what it undoubtedly will be when the new building is completed, and all the facilities of a good veterinary hospital can be offered. During the past year more outside patients, not only in the city but also in the country, have been visited by the students than in the year before, and quite a number of surgical operations have been performed on diseased animals at the premises of their owners.

Mr. Thorne, director of the experiment station, has kindly consented to the further use of the library room in the station building as a class-room until the veterinary building is completed.

In conclusion, allow me to mention that during the last two years not a single book or periodical on any branch of veterinary medicine has been added to the library of the university. I therefore very respectfully ask for a representation of the veterinary department in the library council.

Very respectfully submitted.

H. J. DETMERS,
Prof. of Veterinary Surgery.

Columbus, O., September 15, 1890.

ZOOLOGY AND COMPARATIVE ANATOMY.

To the President of the University:

SIR: I herewith present my annual report for the academic year ending June 25, 1890:

The classes instructed in this department were the following: Human anatomy and physiology, zoology, histology, comparative anatomy and microscopy. In this work I have been ably and most satisfactorily assisted by Mr. Chas. P. Sigerfoos, B. Sc.,

The number registered in the Sophomore class in anatomy and physiology was fifty-three. Instruction extends through the year three hours per week, two of which are devoted to recitations and lectures, and one to demonstrations and practical study in the laboratory. The text-book used was Martin's "Human Body," assigned by terms as follows: Fall term, pp. 1 to 200; winter term, pp. 201 to 403, and spring term, pp. 204 to 606. The lectures given during the course were first explanatory of the text, and second historical and comparative matter, and hygienic subjects of interest and importance, such as ventilation, house-drainage, etc.

The laboratory work was, in general, made parallel with the subjects presented in the text and the lectures. The following outline will make clear the nature of the work required. The first few weeks of the fall term are devoted to the study of supporting tissues. The pupils study every part and every bone of the skeleton, sketching designated ones in their note books; following this they take up the histology of bone, cartilage and connective tissues, making sketches of the microscopical appearances of each. The muscles are studied by aid of the manikin and animal dissection, followed by the histology of the same and demonstrations of muscle curve and the influence of heat and other agents upon it. The histology of blood is next considered, and, as in all cases of histological subjects, each student is provided with a microscope and necessary material; so far as possible comparative examinations are made. The final practical subject of the term is the nervous system, which is studied by means of papier machè models, hardened brains of animals, demonstrations upon dogs and microscopical study of prepared specimens of nerve fibres and cells.

During the winter term the gross and microscopic anatomy of the heart and blood vascular system are first studied. For the former, models and animal dissections are employed; for the latter, prepared objects, of which the laboratory has a good supply, are used. Demonstrations are also made on the physiological action of the heart, capillary circulation, etc. Following this a similar course is taken with the organs of the digestive and respiratory systems.

In the spring term the subjects are the kidneys, skin, eye, ear, larynx, and as much physiological chemistry as time will permit. The guide followed is Stirling's "Physiological Laboratory."

In the Freshman class in physiology, composed of students in the courses in engineering, there were registered twenty-five. The subject is pursued five hours per week during the winter term. The text-book used was Martin's "Briefer Course." The text was pretty closely followed; each week there were three or four recitations accompanied by explanations and full illustrations, the remaining time being used for demonstrations and study of objects, such as papier maché models, dissections and histological preparations.

In the physiological laboratory course three were registered. The work occupies three hours per week, six by the clock, throughout the year. The following is an outline of the work done: 1. Vertebrate dissections using the following manuals: Howell's "Dissection of the Dog," Parker's "Zootomy" and Ecker's "Anatomy of the Frog." 2. The use of apparatus including the spectroscope, saccharimeter, myographs, sphyg-

mographs, etc. And 3. Physiological chemistry, mainly as outlined in Stirling's "Physiological Laboratory."

Nine were registered in zoology, viz.: six agricultural students, three hours per week, and three science students five hours a week, all of whom continued the study during the year. The subject was presented by lectures and laboratory exercises. One hour each week for fall and spring terms was devoted to systematic zoology illustrated by specimens and sketches; the remaining hours to practical study. The text-books used were Huxley and Martin's Biology," Parker's "Zootomy," and Jordan's "Manual of the Vertebrates." The spring term was devoted wholly to entomology; the lectures referred to systematic and economic entomology, and the practical work to the anatomy of insects, their habits and the study of orders. The guide was Comstock's "Elements."

In histology there were nine students registered. The text-book used was Shaefer's "Essentials;" the works of Stirling, Ranvier, Whitman, Beale and others were freely used for reference. Instruction extends through the year, and five hours of laboratory work per week. Lectures are given, the equivalent of one hour per week, on the optics, construction, use and care of the microscope, the preparation and mounting of objects, and in explanation of the histological features of the objects in the course; the remaining time is spent in the practical application of the foregoing instruction. Essentially the whole ground of the text is covered.

Eight students pursued comparative anatomy. It is a three hour study, extending through the year.

Lectures are given one hour a week on technique and the comparative structure of various organs; the remaining hours are devoted to laboratory study of types. The careful dissection of the dog and cat are made a basis of comparison. The texts used are: Flower's "Osteology," Parker's "Zootomy," Howell's "Dissection of the Dog," and others.

There were eight registered in microscopy, to which were devoted two hours per week during the spring term. The first four weeks were given to lectures on the microscope and its use. Then followed work at the tables with the instrument and its accessories. After the ordinary operations came the examination of drugs. In this Oldberg and Wall's Companion to the pharmacopœia was the book of reference.

It will be seen by the foregoing that instruction in the department is largely practical. The aim is to train the whole man; to make students self-reliant and to secure a practical knowledge of the methods and the spirit of investigation.

The collections and general equipment of the department are steadily improving.

Respectfully,

D. S. KELLICOTT,
Professor of Zoology and Comparative Anatomy.

Ohio State University, September 12, 1890.

THE LIBRARY.

To the President of the University:

SIR: The library council submit herewith the annual report of the condition of the library for the year ending June 25, 1890.

The control of the library remained as during the previous year, vested in the library council, and no changes in the membership of that body have been made. The terms of Professors Lord and Weber expired in May, 1890, and both of these gentlemen

were re-appointed for the term of two years from that date. The other members of the council were the president and librarian, both *ex-officio*, and Professors Thomas and Smith.

The number of volumes on the catalogue of the library, June 25, 1890, was 9,345. This is inclusive of the 337 volumes contributed by the German Library Association, mention of which was made in the last report of the council, and includes also the following additions:

Additions since June 30, 1889.

1.	By binding periodicals	63
2.	By gift	74
3.	By replacement	1
4.	By German library	155
5.	By purchase:	
	(*a.*) To replace fire losses	149
	(*b.*) To continue serial publications	15
	(*c.*) To fill old orders	4
	(*d.*) To fill new orders	1
		462

The number of periodicals paid for from general library funds was 66, from department funds, 2; sent free of charge, 21; total, 89. Of these fifty-three are regularly bound.

The legislature appropriated, at its session of 1889–90, the sum of $2,000 for the library. Of this amount $259.28 was appropriated by the executive committee of the board of trustees to complete the purchase of books to replace those destroyed in the fire at the chemical building, leaving a balance of $1,740.72. The bulk of this fund has already been expended during the current fall term, 1890, and a detailed account of this expenditure will properly appear in the next annual report of the council.

The needs of the library remain substantially as stated in the report of last year. The rapid increase in the number of students occasions greater demand than ever before on the privileges of the reading-room, and the inadequacy of the present accommodations is more than ever apparent. Another study-table should be provided for the convenience of young ladies who now, coming to the reading-room for a half-hour's quiet study, frequently find every seat occupied and are forced to retire.

The council desire to urge upon the attention of the board the imperative necessity of an adequate building for the permanent and safe bestowal of the library. In no modern institution of the rank of the university are greater risks taken than are assumed every year in the storing of our books. When it is realized that a collection of ten thousand volumes, many of them works whose rarity and value are constantly increasing, is packed away in a single room on the third floor of a building, which may be swept away by fire any night, the danger of delay in this matter may be appreciated. Donations to the library can hardly be expected, while no better guaranty of safety can be offered the donors than is afforded by the present insecure conditions. On the shelves of the library are precious publications whose loss would be alike disgraceful and irreparable. The state does not insure its property, so much the more should it protect it. The university has many needs, but none in our judgment so pressing as this—the immediate construction of a modern, thoroughly fire-proof building, with sufficient capacity and appliances to house this great and growing trust conveniently, systematically, and above all, *safely*.

The library council are glad to record their renewed appreciation of the services of the assistant librarian, Miss Olive B. Jones. In the absence of a professional expert as librarian, it is indispensable that the assistant librarian should be acquainted with library methods and appliances, and should make herself equal to the responsibility which will inevitably be laid upon her. This local and general library knowledge is being acquired by Miss Jones in ever-increasing measure; and the value of her services is correspondingly increased from year to year.

List of donors to the Ohio State University Library for 1889-90:

Names.	Volumes.
Canada, Royal Society	1
Cornell University Ag. Ex. Station	1
German Library Association	155
Harvard University	1
Henry, J. B.	1
Illinois University	1
Irelan, W.	2
Kansas Academy of Science	2
Leue, Adolph	1
Mass. Board of Lunacy and Charities	1
" " Commissioners of Savings Banks	1
" " Education	1
Maxwell, S. D.	2
Maryland Agricultural College	1
Mechanical Engineers, Amer. Society of	1
Miller, J. Blecker	1
Mining Engineers, Amer. Institute of	3
Ohio, State of	1
Ohio Commissioner of Schools	3
Orton, Dr. Edward	3
Outhwaite, Hon. J.	1
Penn. State College Ag. Ex. Station	1
Robinson, Prof. S. W.	1
Scott, Pres., W. H.	2
Selby, A. D.	1
Sharp, Mrs. K. D.	1
Smithsonian Institution	19
United States Government	20

This list does not include donors of pamphlets not catalogued.

PERIODICAL LIST FOR 1889–90.

Biologisches Centralblat, Mathematische Annalen, Landwirthshaftliche Versuchsstationen, Historische Zeitschrift, LaLumiere Electrique, Revue des deux Mondes, Chemical News, Electrician, Engineering, English Historical Review, Geological Magazine, Journal of Botany, Journal of the Chemical Society, Journal of Mental Science, Journal of the Statistical Society, Philosophical Magazine, Mind, The Observatory, Quarterly Journal of Geol. Society, Spectator, Veterinary Journal, Scientific American, Popular Science Monthly, American Machinist, Engineering and Mining Journal, Sanitary Engineer, Engineering and Building Record, Railroad Gazette, Bulletin of Torrey Botany Club, Breeders' Gazette, Rural New Yorker, American Dairyman, Magazine of American History, The Nation, Edinburgh Review, Quarterly Review, Nineteenth Century, Contemporary Review, Fortnightly Review, Forum, North American Review, American Journal of Science and Art, Andover Review, American Journal of Philology, Science, Atlantic Monthly, Library Journal, American Journal of Mathematics, Nature, Journal of Economics, Journal of Franklin Institute, Botanical Gazette, Annals of Botany, Electrical Engineer, Annals of Mathematics, Public Opinion, Sidereal Messenger, Journal of Morphology, American Naturalist, Political Science Quarterly, Classical Review, Journal of Am. Archæological Society, Am. Journal of Psychology, Arbeiten aus d. Kais. Gesundheitsamte, Annalen der Chemie, Archiv. f. Thierheilkunde, Fliegende Blaetter, Jahresbericht Veterinar Medicine, Jahresbericht d. Fortschritte d. Agriculturchemie, Johns Hopkins University Studies, Jersey Bulletin, Jahresbericht d. Alterthümer-Wissenschaft.

Several of the periodicals in the list just given, were purchased by the departments for their special use, but are included with those of the general list in order to show more completely the resources of the university in the field of periodical literature.

The following periodicals were sent free: *American Economist, American Engineer, Bulletin of Wool Manufacturers, Christian Register, Columbus Record, Dairy News, Farm and Fireside, Lutheran Evangelist, Mechanical News, National Stockman, New York Weekly Witness, New York Pioneer, R. R. and Engineering Journal, Statesman, Sunday School Times, The Unitarian, Unitarian Review, Unity, Druggists' Circular, National Druggist, The Registered Pharmacist, Mechanics, Christian Union.*

Respectfully submitted.

S. C. DERBY, *Secretary.*

Ohio State University, October, 1890.

TREASURER'S REPORT.

COLUMBUS, O., *November* 15, 1890.

To the Honorable THOS. J. GODFREY, *President Board of Trustees, O. S. U.:*

SIR: I submit herewith my report for the fiscal year ending this 15th day of November, 1890.

Respectfully yours,

F. W. PRENTISS, *Treasurer.*

STATEMENT I.

DETAILED STATEMENT OF RECEIPTS BY F. W. PRENTISS, TREASURER, DURING FISCAL YEAR ENDING 15TH NOVEMBER, 1890.

Date.	Received from—	On account of—	Amount.
1890.			
Nov. 15	Balance ..	As per my report 1888–9	$5,024 78
Dec. 4	State Treasury	On account of interest on endowment fund, due 1st January, 1890	3,000 00
	G. D. Lemons	Sale of lot 190, Adams county	33 00
	B. F. Thomas	3d installment rent, 1889–90	42 50
	D. S. Kellicott	" " "	47 50
	W. H. Scott	" " "	38 50
23	State Treasury	Balance interest on endowment fund due 1st January, 1890	3,161 16
	State Treasury, on acc't State appropriations	Erection and equipment building, electrical engineering	244 36
	State Treasury, on acc't State appropriations	Erection and equipment building, electrical engineering	404 67
	State Treasury, on acc't State appropriations	Temporary equipment department, gen'l chemistry, etc	35 31
	State Treasury, on acc't State appropriations	Temporary equipment department, gen'l chemistry, etc	4 55
	State Treasury, on acc't State appropriations	Expenses trustees	135 15
	State Treasury, on acc't State appropriations	Equipment school of mines	90 00
	State Treasury, on acc't State appropriations	" "	6 21
	State Treasury, on acc't State appropriations	Library	295 49
	State Treasury, on acc't State appropriations	Green-house	50 00
24	Ohio Ag. Experim't Sta'n	Sale of farm stock	1,268 68
1890.			
Jan. 31	C. A. Roth	Rent July, August, Sept., Oct., Nov., Dec., 1889	60 00
	Alexis Cope, bursar	Term fees, fall '89, winter '90	2,879 00
	State Treasury, on acc't State appropriations	Erection and equipment building, electrical engineering	151 22
	D. S. Kellicott	4th installment rent, '89–90	47 50
	W. H. Scott	9th " '88–89	38 50
	"	4th " '89–90	38 50
	B. F. Thomas	4th " '89–90	42 50
	"	Gas bill, Oct. '89	4 40
	C. N. Brown	3d, 4th and 5th install'ts rents, '89–90.	112 50
	"	Gas bill, Dec. '89	7 20
	Applicants for deeds	12 deeds, act March 14, 1889	24 00
	State Treasury	On account of interest on endowment fund, due 1st July, 1890	2,700 00
Feb. 14	State Treasury, on acc't State appropriations	Temporary equipm't dept. chem, etc	18 60
	State Treasury, on acc't State appropriations	Appliances for teaching anatomy	210 60
	State Treasury, on acc't State appropriations	Improvement of campus	207 00

STATEMENT I—Continued.

Date.	Received from—	On account of—	Amount.
1890.			
Feb. 14	State Treasury, on acc't State appropriations ...	Erection and equipm't electrical bld'g	$300 84
	State Treasury, on acc't State appropriations ...	Equipm't school of mines	219 88
	State Treasury, on acc't State appropriations ...	Green house	100 00
	State Treasury, on acc't State appropriations ...	Expenses trustees	34 60
27	D. S. Kellicott	5th installment rent, '89–90	47 50
	"	Gas bill, quar. ending Dec. 31, '89	12 90
	W. H. Scott	5th installment rent, '89–90	38 50
	"	Gas bill, quar. ending Dec. 31, '89	10 40
	Benj. F. Thomas	5th installment rent, '89–90	42 50
	"	Gas bill, quar. ending Dec. 31, '89	11 90
	State Treasury, on acc't State appropriations ...	For salaries	5,400 00
Mar. 15	State Treasury	On account of interest on endowment fund, due 1st July, 1890	3,000 00
24	State Treasury, on acc't State appropriations ...	Expenses trustees	54 00
	State Treasury, on acc't State appropriations ...	Green house	50 00
	State Treasury, on acc't State appropriations ...	Electrical building	34 77
	State Treasury, on acc't State appropriations ...	Grading and pavement	80 80
	State Treasury, on acc't State appropriations ...	School of mines	225 71
	State Treasury, on acc't State appropriations ...	Temporary equipment	304 67
	State Treasury, on acc't State appropriations ...	Salaries	4,600 00
Apr. 25	Alexis Cope, bursar	Term fees—Spring	2,220 00
	State Treasury, on acc't State appropriations ...	Erection electrical building	276 73
	State Treasury, on acc't State appropriations ...	Equipment school mines	340 00
	State Treasury, on acc't State appropriations ...	Green house	50 00
	State Treasury, on acc't State appropriations ...	Fuel and care buildings	449 62
	State Treasury, on acc't State appropriations ...	Salaries	2,000 00
	State Treasury, on acc't State appropriations ...	Furnishing and equipping laboratory	1,619 00
	W. H. Scott	6th installment rent, 89-90	38 50
	D. S. Kellicott	" "	47 50
	C. A. Roth	Rent January, 1890	10 00
	S. W. Robinson	Testing babbitt metal	10 00
	B. F. Thomas	6th installment rent, 89–90	42 50
	W. H. Scott	7th " "	38 50
	D. S. Kellicott	" " "	47 50
	C. A. Roth	Rent February, 1890	10 00
	C. N. Brown	6th and 7th installments rent, 89–90	75 00
	"	Gas bill, quarter end. March 31, 1890	5 50
	B. F. Thomas	7th installment rent, 1889–90	42 50
	"	Gas bill, quarter end. March 31, 1890	7 20

STATEMENT I—Continued.

Date.	Received from—	On account of—	Amount.
April 25	State Treasury	On account of interest on endowment fund due 1st July, 1890	$2,000 00
28	C. N. Brown	8th installment rent, '89–90	37 50
	D. S. Kellicott	" "	47 50
	"	Gas bill, quarter end. March 31, 1890	9 50
	B. F. Thomas	8th installment rent, 89–90	42 50
	W. H. Scott	" "	38 50
	"	Gas bill, quarter end. March 31, 1890	9 10
May 9	State Treasury, on acc't State appropriations	Furnish'g and equipping laboratory	8,069 90
	N. S. Townshend	Rent, year ending 30th April, 1890	300 00
	State Treasury, on acc't State appropriations	Furnish'g and equipping laboratory	815 78
	State Treasury, on acc't State appropriations	Trustees' expenses	78 15
	State Treasury, on acc't State appropriations	Erection and equip'g elect'l build'g	115 55
	State Treasury, on acc't State appropriations	Ordinary repairs	35 40
	State Treasury, on acc't State appropriations	Library	169 14
	State Treasury, on acc't State appropriations	Equipment school of mines	345 18
	State Treasury, on acc't State appropriations	Fuel and care of buildings	345 45
	State Treasury, on acc't State appropriations	Grading and paving	106 50
June 19	State Treasury	On account of interest on endowment fund, due 1st July, 1890	5,000 00
	W. H. Scott	9th installment rent, '89–90	38 50
	B. F. Thomas	" "	42 50
	D. S. Kellicott	" "	47 50
	C. N. Brown	" "	37 50
	A. Cope, Bursar	Term fees	255 00
27	State Treasury, on acc't State appropriations	Ordinary repairs	111 70
	State Treasury, on acc't State appropriations	Erection and equip'g elect'l build'g	146 80
	State Treasury, on acc't State appropriations	Library	102 86
	State Treasury, on acc't State appropriations	Equipment school of mines	763 00
	State Treasury, on acc't State appropriations	Grading and paving	169 10
	State Treasury, on acc't State appropriations	Fuel and care of buildings	503 84
	State Treasury, on acc't State appropriations	Improvement campus	232 85
30	State Treasury	Balance of interest on endowm't fund, due 1st July, 1890	3,551 37
July 22	State Treasury, on acc't State appropriations	Fuel and care of buildings	274 57
	State Treasury, on acc't State appropriations	Ordinary repairs	60 54
	State Treasury, on acc't State appropriations	Improvement campus	57 15
	State Treasury, on acc't State appropriations	Grading and paving	78 60

STATEMENT I—Continued.

Date.	Received from—	On account of—	Amount.
	State Treasury, on acc't State appropriations...	Equipment school of mines.....	$70 00
Aug. 6	State Treasury, on acc't State appropriations...	Furnish'g and equipping laboratory...	5,010 70
	State Treasury, on acc't State appropriations...	Ordinary repairs.....	164 77
	State Treasury, on acc't State appropriations...	Additional boilers.....	63 90
Aug. 25	State Treasury.....	On account of interest endowm't fund, due 1st January, 1890.....	5,000 00
Sept. 4	State Treasury, on acc't State appropriations...	Erection and equip'g elect'l build'g...	27 61
	State Treasury, on acc't State appropriations...	Additional boiler.....	184 18
	State Treasury, on acc't State appropriations...	Equipment school of mines.....	82 11
	State Treasury, on acc't State appropriations...	Furnish'g and equipping laboratory...	285 46
	State Treasury, on acc't State appropriations...	Green house.....	250 00
	State Treasury, on acc't State appropriations...	Grading and paving.....	22 50
	State Treasury, on acc't State appropriations...	Improvement campus.....	85 62
	State Treasury, on acc't State appropriations...	Fuel and care of buildings.....	155 00
	State Treasury, on acc't State appropriations...	Ordinary repairs.....	1,174 89
Oct. 2	State Treasury.....	On account of interest endowm't fund due 1st January, 1890.....	3,000 00
8	State Treasury, on acc't State appropriations...	Additional boilers, etc.....	743 41
	State Treasury, on acc't State appropriations...	Ordinary repairs.....	1,129 02
	State Treasury, on acc't State appropriations...	Grading and paving.....	22 75
	State Treasury, on acc't State appropriations...	Equipping laboratory.....	549 66
	State Treasury, on acc't State appropriations...	Equipping school of mines.....	1,502 05
	State Treasury, on acc't State appropriations...	Fuel and care of buildings.....	291 47
	State Treasury, on acc't State appropriations...	Green house.....	50 00
	State Treasury, on acc't State appropriations...	Expenses trustees.....	148 40
	State Treasury, on acc't State appropriations...	Improvement campus.....	40 00
15	D. S. Kellicott.....	10th installment rent, '89-90.....	47 50
	W. H. Scott.....	" "	38 50
	C. N. Brown.....	" "	37 50
	S. W. Robinson.....	Scrap iron sold.....	6 75
	B. F. Thomas.....	10th installment rent, '89-90.	42 50
	"	Gas bill to June 30, 1890..... ..	4 20
	C. A. Roth..	Rent 5 months to August, 1890.....	50 00
	W. R. Lazenby.....	Stock sold Experiment Station	31 79
	"	Receipts green house to Aug. 1, 1890 ..	11 95
	L. D. Evans	Rent to October 1, 1890.....	20 00
	President Eliot.....	Excess of expenses allowed.....	5 00
	Chapter Beta Theta Pi...	On account of rent.....	40 00

STATEMENT I—Concluded.

Date.	Received from—	On account of—	Amount.
1890.			
Oct. 15	Alexis Cope, Secretary...	Balance due on account Jos. Pauling notes, lot 70, Pike Co..	$37 50
	W. R. Lazenby.....	Receipts green-house to 1st Oct., '90...	6 10
Nov. 1	A. Cope, bursar.....	Term fees, fall 1890	3,167 00
	D. S. Kellicott.....	Gas bill...	4 90
	W. H. Scott.....	1st and 2d installment rent, 1890-91..	77 00
	B. F. Thomas..	" " " ..	85 00
	Geo. W. Knight.....	" " " ..	75 00
	W. T. Matheny.....	5 a Va. Military Lands, Adams Co ...	10 00
5	A. Cope, bursar.....	Sale lead and iron	125 05
	" Secretary.....	For 49 deeds drawn, act 14th Mar., '89	98 00
	L. D. Evans..	Rent Oct. and Nov., 1890	40 00
10	P. P. Evans.....	Rent chapter house	40 00
	W. H. Scott.....	Gas bill, quar. ending 30th June, '90..	7 40
	State Treasury, on acc't State appropriations...	Ordinary repairs..	184 30
	State Treasury, on acc't State appropriations...	Furnishing and equipp'g laboratory..	72 58
	State Treasury, on acc't State appropriations...	Fuel and care buildings	400 23
	State Treasury, on acc't State appropriations...	Equipping school of mines.....	802 00
	State Treasury, on acc't State appropriations...	Green house.....	50 00
	State Treasury, on acc't State appropriations...	Improvement campus	40 00
	State Treasury, on acc't State appropriations...	Equipment electrical laboratory.....	56 84
	State Treasury, on acc't State appropriations...	Library	985 37
14	A. Cope.....	Pasture horse and cow.....	20 00
	H. Cockell..	" cow	10 00
			$93,144 89

STATEMENT II.

DETAILED STATEMENT OF DISBURSEMENTS BY F. W. PRENTISS, TREASURER, DURING FISCAL YEAR ENDING NOVEMBER 15, 1890.

Date.	To whom paid.	On account of.	No.	Amount.
1889.				
Nov. 20	Thos. J. Godfrey	Expenses of trustee	1	$14 95
	Lucius B. Wing	"	2	39 40
21	Thos. A. Cowgill	"	3	53 49
	Lucius B. Wing	"	4	17 40
	D. M. Massie	"	5	18 45
23	W. H. Scott	Bills paid—expenses association agricultural colleges	6	38 93
27	Standard Coal Co	Coal delivered	7	138 75
	C. B. Morrey	Cleaning books, etc., library	8	5 63
30	H. A. Weber	Salary Nov., 1889, installment	9	225 00
	E. K. Coulter	5½ days visitors attendant	10	7 43
	Not issued	Not issued	11	
	H. A. Surface	26½ hours services	12	6 63
	W. H. Scott	Salary, Nov., 1889, installment	13	300 00
	Edward Orton	" "	14	225 00
	S. A. Norton	" "	15	225 00
	N. S. Townshend	" "	16	225 00
	S. A. Robinson	" "	17	225 00
	N. W. Lord	" "	18	200 00
	S. C. Derby	" "	19	225 00
	W. R. Lazenby	" "	20	225 00
	J. R. Smith	" "	21	225 00
	Benj. F. Thomas	" "	22	225 00
	Jno. W. Queen	" "	23	180 00
	H. J. Detmers	" "	24	120 00
	Chas. E. Kilbourne	" "	25	50 00
	R. D. Bohannan	" "	26	225 00
	D. S. Kellicott	" "	27	225 00
	C. N. Brown	" "	28	200 00
	B. L. Bowen	" "	29	150 00
	E. A. Eggers	" "	30	180 00
	Geo. B. Kauffman	" "	31	100 00
	James Chalmers	" "	32	180 00
	Geo. W. McCoard	" "	33	140 00
	F. W. Sperr	" "	34	140 00
	Jos. N. Bradford	" "	35	140 00
	J. T. Whitney	" "	36	140 00
	Frederick Kefler	" "	37	80 00
	Jos. A. Wilgus	" "	38	50 00
	C. P. Sigerfoos	" "	39	70 00
	Chas. W. Mesloh	" "	40	40 00
	W. F. Lavery	" "	41	20 00
	A. D. Haines	" "	42	60 00
	Olive B. Jones	" "	43	30 00
	Michael Queal	" "	44	12 50
	W. C. McCracken	" "	45	75 00
	W. H. Holmes	" "	46	40 00
	E. C. Grove	" "	47	37 50
	F. W. Prentiss	" "	48	33 33
	Alexis Cope	" "	49	166 67
	C. A. Roth	" "	50	50 00

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1889.				
Dec. 2	Columbus Post-office	Postage stamps	51	$20 00
	Washington Townshend	26 days' services as janitor	52	39 00
9	Jos. R. Taylor	Salary, Sept., Oct. and Nov., 1889, installments	53	60 00
16	J. L. Stimbaugh	9 hours' labor, @ 17½c. per hour.	54	1 58
17	Jno. W. Queen	Salary, Dec., 1889, installment	55	180 00
	Paul Lincoln	9 hours' labor, @ 17½c. per hour.	56	1 58
	Horace H. Blunt	14 d's, 7 h'rs' services hort'l b'l'g.	57	21 05
	W. A. Carr	64 h'rs' labor carp'r work, etc	58	16 90
Dec. 18	Andrew Koupt	Services rendered and material	59	41 30
19	James Chalmers	Salary, Dec., 1889, installment	60	180 00
	D. S. Kellicott	Supplies physio. department	61	8 55
	B. L. Bowen	Salary, Dec., 1889, installment	62	150 00
	Jos. R. Taylor	" " "	63	20 00
	Sidney A. Norton	" " "	64	225 00
	Olive B. Jones	" " "	65	30 00
21	Geo. W. McCoard	" " "	66	140 00
	H. A. Weber	" " "	67	225 00
	W. H. Scott	" " "	68	300 00
	Edward Orton	" " "	69	225 00
	N. S. Townshend	" " "	70	225 00
	S. W. Robinson	" " "	71	225 00
	N. W. Lord	" " "	72	200 00
	J. A. Smith	" " "	73	225 00
	C. P. Sigerfoos	" " "	74	70 00
	J. A. Wilgus	" " "	75	50 00
	C. E. Kilbourne	" " "	76	50 00
	C. P. Sigerfoos	Supplies physio. department	77	7 70
	H. J. Detmers	Salary, Dec., 1889, installment	78	120 00
	S. C. Derby	" " "	79	225 00
	D. S. Kellicott	" " "	80	225 00
	C. W. Mesloh	" " "	81	40 00
	J. N. Bradford	" " "	82	140 00
	W. R. Lazenby	" " "	83	225 00
	Benj. F. Thomas	" " "	84	225 00
	R. D. Bohannon	" " "	85	225 00
	M. Queal	" " "	86	12 50
	F. W. Sperr	" " "	87	140 00
	E. A. Eggers	" " "	88	180 00
	Door, Sash & Lumber Co.	10 drawing tables	89	90 00
23	W. C. McCracken	Salary, Dec., 1889, installment	90	75 00
	E. C. Grove	" " "	91	40 00
	F. W. Prentiss	" " "	92	33 33
	Alexis Cope	" " "	93	166 67
	Fred. Keffer	" " "	94	80 00
	W. H. Scott	Paid Dr. Mayo, Sunday lecture	95	25 00
	S. C. Benet, Chief of Ordinance	Injury to arms exchanged	96	96 51
26	Columbus Dispatch	Advertising	97	12 00
30	J. T. Whitney	Salary, Dec., 1889, installment	98	100 00
	B. F. Thomas	Supplies electrical buildings	99	170 53
	B. F. Thomas	Supplies and labor electrical b'l'gs	100	32 85
	W. H. Holmes	Salary for Dec., 1889	101	40 00
1890.				
Jan. 3	The Taper Sleeve P. W'ks	Supplies for electrical buildings	102	6 80
4	W. A. Carr	Services rendered	103	13 83
	Wash. Townsend	25 days as janitor, Dec., 1889	104	37 50
	A. D. Haines	Salary, Dec., 1889, installment	105	60 00
	Geo. B. Kauffman	" " "	106	100 00

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Jan. 7	C. N. Brown	Salary, December, 1889, install't.	107	$200 00
	Samuel C. Derby	Postage for library	108	2 00
11	Franklin Rubber Co	Supplies for elect. building	109	34 35
	The Ashcroft Mfg Co	" " "	110	9 80
	H. Braun, Sons & Co	" " "	111	3 93
	Slade & Kelton	" " "	112	20 28
	Weston Elect. Inst. Co	" " "	113	75 00
	Shultz Belting Co	" " "	114	20 05
	The P. Hayden S. H. Co.	" " "	115	5 51
	Aston & Huff	" " "	116	28 10
	The Falls Rivet & M'h Co	" elect. department	117	14 99
	Sawyer Man. Elect. Co	" "	118	21 50
	H. Braun, Sons & Co	" "	119	5 60
	Potts & McCoy	" "	120	4 14
	The Elect. Supply Co	" "	121	53 16
	J. H. Bunnel & Co	" "	122	35 15
	The Col. Transfer Co	Freight and drayage elect. dep't.	123	64 38
	Potts & McCoy	Supplies elect. dep't	124	5 15
	B. F. Cotterman	5 days' carp'r work elect. dep't.	125	11 25
	Door, Sash & Lumber Co.	Supplies elect. dep't	126	84 50
	The Elect. Supply Co	" "	127	9 33
	Geo. M. Maris & Co	" glass and hardware	128	21 25
	Slade & Kelton	" elect. dep't.	129	4 12
	Samuel Zinn	" "	130	7 62
	Col. Cabinet Co	3 kitchen tables	131	8 00
	Col. Transfer Co	Freight and sup. school of mines	132	6 21
	Slade & Kelton	Supplies dep't gen. chemistry	133	4 55
	Col. Transfer Co	Freight, etc., sup. dep't gen. chem	134	28 36
	A. H. Smythe	Books for library	135	142 83
	Gustave E. Stechert	"	136	138 68
	J. H. Wulfekoetter	"	137	6 75
	B. Westerman	"	138	7 23
	Cols. & Hock'g C'l & I. Co.	Coal delivered	139	64 53
	Moore, Adams & Co	Lumber for repairs	140	16 87
	Glock & Tallmadge	Supplies, etc., mechanical dep't.	141	10 09
	H. Braun, Sons & Co	General supplies	142	3 30
	Aston & Huff	"	143	29 25
	Quaker City Chair Co	5 doz. chairs	144	57 00
	Hann & Adair	Stationery	145	6 65
	W. G. Benham	Supplies for band	146	4 40
	D. Y. Murdoch	Advertising Ohio Conf. min	147	6 00
	R. E. Jones	Carriages, commencement	148	10 00
	Potts & McCoy	Fittings, general repairs	149	6 80
	Vacuum Oil Co	Supplies physical mech'l dep't	150	18 20
	O. S. Journal Co	Advertising	151	11 87
	A. H. Smythe	Supplies physio. dep't	152	5 50
	E. C. Walker	Hanging casts museum	153	3 50
	H. Braun, Sons & Co	Supplies physio. dep't	154	37 86
	Geo. H. Twiss	" civil eng'r'g dep't	155	20 26
	Adams Express Co	Freight on books	156	1 10
	W. F. Lavery	Skeleton of cow, vet. dep't	157	60 00
	Kilbourne, Jones & Co	Supplies mech'l dep't	158	41 07
	Potts & McCoy	Fittings, etc	159	8 81
	David Postle	One horse for dissection	160	5 00
	Thos. J. Driskell & Co	Supplies mech'l dep't	161	40 06
	Cherrington & Robinson.	Recutting seal	162	3 00
	J. W. Queen & Co	Supplies physical dep't	163	24 60
	Col. Transfer Co	Freight and drayage, books	164	18 29
13	Horace H. Blunt	109 hours' work, Hort. building	165	16 35

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Jan. 13	J. W. Whittemore	Hau'g guns from dep't to arsenal	166	$1 00
	U. S. Express Co	Freight on packages	167	5 35
	W. Burwell	Hauling for campus	168	13 75
	Jeremiah Ellis	Surveying, etc., Va. mill lands	169	14 00
	Strobridge Lith. Co	Supplies	170	10 00
	L. J. McNaughton	Services as band leader	171	6 00
	The Farmers Home P. Co.	Advertising	172	5 40
	Geo. M. Maris	Supplies	173	1 25
	The Cin. Press Associa'n.	Advertising	174	21 45
	Z. L. White & Co	50 yds. canton flannel for guns	175	3 00
	Pender & Coe	Lumber for repairs	176	10 47
	Williams & Co	1 copy state directory	177	5 00
	Siebert & Lilley	2 order books	178	15 00
	Glock & Tallmadge	Supplies	179	3 70
	Chas. O. Tracy & Co	2 doz brooms	180	4 00
	W. U. Telegraph Co	Messages	181	50
	Hann & Adair	Blanks, etc	182	15 30
	Bausch & Lomb Op'al Co.	Supplies physio. dep't	183	42 11
	The Educational Sup. Co.	" "	184	12 50
	Noble Patterson	2 days' labor, repairs	185	7 00
	Richard Burns	" "	186	3 50
	Dunn, Taft & Co	16 yds. canton flannel for guns	187	1 00
	The Central O. Paper Co.	100,000 sheets of paper	188	35 00
	W. H. Barrow	Sup. dep't G'k & dep't civil en'g.	189	6 30
	Hershiser & Snyder	Supplies mech'l dep't	190	13 95
	Schroth & Potter	" geo'l dept	191	4 00
	W. A. Carr	" civil engineering dep't	192	6 00
	C. N. Brown	" " "	193	4 10
	Smith & Conklin	One office table and chairs	194	24 75
	Val Loewer	Repairing and laying carpet	195	5 50
	H. Braun, Sons & Co	Supplies	196	5 30
	Siebert & Lilley	1 receipt book	197	6 75
	Potts & McCoy	Supplies chem. dep't	198	28 69
	Glock & Tallmadge	" general repairs	199	4 17
	Col. Water Works	Rents to Nov. 1, 1889	200	161 50
	C. U. Telephone Co	Rent, 2 instruments, to Mar.31,'90	201	25 20
	Alexis Cope	Exp's to Ironton and Portsmouth matter of Kendrich suits	202	11 35
	M. Queal	Refunding expressage paid	203	75
	Standard Coal Co	Account coal delivered	204	288 76
14	W. F. Lavery	Salary, Dec.,'89, installments	205	20 00
15	Pender & Coe	Lumber for repairs	206	17 96
16	Jos. H. Brigham	Exp's attending meet'gs Jan. '90	207	10 00
17	The O. S. Journal Co	Plate and ad's souvenir of Col	208	75 00
25	H. A. Weber	Salary, Jan.,'90, installment	209	225 00
	C. N. Brown	" "	210	200 00
	Alexis Cope	" to Feb. 1, 1890	211	166 67
30	F. W. Prentiss	" " 1, 1890	212	33 33
	C. A. Roth	" " 1, 1890	213	100 00
	W. C. McCracken	" " 1, 1890	214	75 00
31	E. C. Grove	" " 1, 1890	215	40 00
	W. H. Scott	" Jan., '90, installment	216	300 00
	Edward Orton	" " "	217	225 00
	Sidney A. Norton	" " "	218	225 00
	N. S. Townshend	" " "	219	225 00
	S. W. Robinson	" " "	220	225 00
	N. W. Lord	" " "	221	200 00
	Samuel C. Derby	" " "	222	225 00
	W. R. Lazenby	" " "	223	225 00

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
	J. R. Smith	Salary to Jan. 1890, installment	224	$225 00
	B. F. Thomas	" " "	225	225 00
	John W. Queen	" " "	226	180 00
	E. C. Kilbourne	" " "	227	50 00
	H. J. Detmers	" " "	228	120 00
	R. D. Bohannan	" " "	229	225 00
	D. S. Kellicott	" " "	230	225 00
	C. N. Brown	" " "	231	200 00
	B. L. Bowen	" " "	232	150 00
Jan. 31	E. A. Eggers	" " "	233	180 00
	Geo. B. Kauffman	" " "	234	100 00
	W. H. Holmes	" " "	235	40 00
	Thomas A. Cowgill	Exp. att'g Bd. & Ex. meet'gs	236	26 40
	W. Townsend	Services janitor, Jan., 1890	237	39 00
	James Chalmers	Salary, Jan., 1890, installment	238	180 00
	C. W. Mesloh	" " "	239	40 00
	George W. McCoard	" " "	240	140 00
	James A. Wilgus	" " "	241	50 00
	Olive B. Jones	" " "	242	30 00
	J. N. Bradford	" " "	243	140 00
	J. R. Taylor	" " "	244	20 00
	C. P. Sigerfoos	" " "	245	70 00
	Fred. Keffer	" " "	246	80 00
	F. W. Sperr	" " "	247	140 00
	W. F. Lavery	" " "	248	20 00
	W. H. Scott	Prest. Chamberlain lecture	249	20 00
	A. D. Haines	Salary, Jan., 1890, installment	250	60 00
	Jos T. Whitney	" " "	251	100 00
Feb. 10	John Bascom	Course of lectures	252	120 00
	Columbus Post-office	1 thousand 2c stamps	253	20 00
13	A. D. Green	Digging ditch to repair pipe	254	3 00
	D. Jennings	3½ days' mason's helper	255	6 12
14	Noble Patterson	3½ days mason work	256	12 25
	Alexis Cope	Exp. trip to Portsmouth, V. M. L	257	12 75
15	Standard Coal Co	On account of coal delivered	258	181 65
	H. H. Blunt	22 days' clinical work in dept's	259	33 90
18	I. N. Beller	1 horse, vet'y dept	260	5 00
21	Col. Picture Frame Co	Frames, drawing dept.	261	54 55
	R. B. Hayes	Expenses trustee	262	10 00
	Thomas A. Cowgill	" "	263	21 90
	Thomas J. Godfrey	" "	264	22 10
	A. D. Green	4½ days' work	265	6 75
	W. F. Lavery	2 horses, veterinary dept	266	9 00
24	H. Cole	Instruments, school mines	267	87 00
27	E. A. Eggers	Salary, February 1890, install	268	180 00
	Aston & Huff	Supplies, dept. gen'l chem	269	18 60
	Kauffman, Lattim'r & Co	" school of mines	270	57 20
	Eimer & Amend	" " "	271	75 68
	James Kelley	Labor, lawn, Oct., Nov., Dec	272	120 00
	W. R. Lazenby	290 loads of gravel	273	87 00
	Jas. W. Queen & Co	Supplies for dept's	274	151 05
28	W. C. McCracken	Salary to March 1, 1890	275	75 00
	Val. Loewer	Carpet for young ladies' room	276	70 60
	Wash. Townsend	11 days as janitor	277	16 50
	W. H. Scott	Salary, Feb., 1890, installment	278	300 00
	Edward Orton	" " "	279	225 00
	S. A. Norton	" " "	280	225 00
	N. S. Townshend	" " "	281	225 00

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Feb. 28	S. W. Robinson	Salary, Feb., 1890, installment	282	$225 00
	N. W. Lord	" " "	283	200 00
	S. C. Derby	" " "	284	225 00
	W. R. Lazenby	" " "	285	225 00
	J. R. Smith	" " "	286	225 00
	H. A. Weber	" " "	287	225 00
	B. F. Thomas	" " "	288	225 00
	James W. Queen	" " "	289	180 00
	H. J. Detmers	" " "	290	120 00
	Chas. E. Kilbourne	" " "	291	50 00
	R. D. Bohannan	" " "	292	225 00
	D. S. Kellicott	" " "	293	225 00
	George B. Kauffman	" " "	294	100 00
	B. L. Bowen	" " "	295	150 00
	James Chalmers	" " "	296	180 00
	George W. McCoard	" " "	297	140 00
	F. W. Sperr	" " "	298	140 00
	Jos. N. Bradford	" " "	299	140 00
	Joseph T. Whitney	" " "	300	100 00
	Fred. Keffer	" " "	301	80 00
	James A. Wilgus	" " "	302	50 00
	Charles P. Sigerfoos	" " "	303	70 00
	A. D. Haines	" " "	304	60 00
	C. W. Mesloh	" " "	305	40 00
	W. F. Lavery	" " "	306	20 00
	J. R. Taylor	" " "	307	20 00
	Olive B. Jones	" " "	308	30 00
	E. C. Grove	Salary to March 1, 1890	309	40 00
	W. H. Holmes	" " "	310	40 00
	Alexis Cope	" " "	311	166 67
	F. W. Prentiss	" " "	312	33 33
	Samuel Zion	11½ lbs. brass casti'gs, elect. dept.	313	2 87
	Col. Edison Elect. Lt. Co.	Copper wire, elect. dept.	314	1 25
Mar. 1	B. F. Thomas	Supplies, electrical dept.	315	62 57
	John Grove	5½ days' work, cesspool	316	8 25
	Charles A. Roth	Salary to March 1, 1890	317	50 00
	Franklin Rubber Co	Supplies, electrical dept.	318	36 09
	J. & H. Berge	" " "	319	3 00
	C. C. Smith	Services Prest. clerk, Jan. & Feb.	320	15 62
	J. H. Bunnell & Co.	Supplies, electrical dept.	321	112 02
	D. T. Roy	Amt. pd. for horse, inauguration	322	1 50
4	A. D. Green	12½ days as janitor	323	18 75
	J. L. Coryell	Map of Adams county	324	3 00
5	W. U. Telegraph Co.	Messages	325	1 41
6	Wm. G. Anderson	1 day digging ditch	326	1 50
	W. G. Williams	Sunday lecture	327	20 00
	Washington Gladden	"	328	20 00
	H. T. Mills	20 hours cleaning machinery	329	3 00
7	C. P. Sigerfoos	Supplies, physo. dept.	330	19 95
	The Standard Coal Co.	On account of coal delivered	331	110 04
	McClure Bros.	Stairs, etc., dormitory	332	7 00
	Sanitary Plumbing Co.	Add'l. plumb'g, electrical build.	333	83 04
8	U. S. Express Co	Expressage, electrical dept.	334	3 95
10	Thomas G. Neski & Co.	Pump for dormitory	335	20 00
	The Eddy Elect. mf'g. Co.	Supplies, elect. department	336	15 00
	Krauss & Mehan	" "	337	13 50
	H. Mithoff & Co.	Brass and copper wire	338	2 32
11	Col. & Hock'g. C. & I. Co.	On account coal delivered	339	129 12
	Potts & McCoy	Pipe, etc.—repairs	340	5 57

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Mar. 11	Cent. Union Tel. Co.	Rent signal line to Feb. 15, '90	341	$25 00
	Cols. Supply Co.	Gas fittings	342	70
	Gazette Printing Co.	Printing blanks, etc	343	21 00
	P. Hayden S. & H'd'w Co.	Supplies, mech. dep't	344	1 76
	Aston & Huff	Stove, etc., dormitory	345	15 75
	L. Geiggle & Son	Corner irons, dormitory	346	1 25
	Kilbourne, Jones & Co.	Supplies, geo'l dep't	347	2 30
	McClelland & Co.	Stationery	348	4 65
	H. Braun, Sons & Co.	Supplies, bot'l dep't	349	4 30
	Kauffman, Lattimer & Co.	" dep't pharm	350	59 20
	Glock & Tallmadge	" for repairs	351	5 07
	W. R. Lazenby	Exp's attending Farmers' Inst	352	21 55
	Borger Bros. & Co.	Iron tank	353	100 00
	Shilling Foundry Co.	Supplies, mech'l dep't	354	8 98
	Strobridge Litho. Co.	2,000 letter heads	355	13 50
	Siebert & Lilley	Blank books, etc	356	11 55
	W. G. Benham	Base-drum head	357	4 00
	O. Soc'y S. & C. Engineers.	Advertising in report	358	10 00
	Aston & Huff	Supplies	359	2 25
	Geo. J. Schœdinger	Horse hire, inauguration	360	2 50
	J. R. Pierson	" "	361	6 00
	W. R. Lazenby	Supplies, dep't botany	362	1 00
	Pender & Co.	Lumber for shelves	363	7 35
	J. W. Bannon	Exp's in connection with Scioto Co. land	364	12 60
	The M. C. Lilley & Co.	Supplies for band	365	1 50
	The Advance Pub. Co.	Advertising	366	2 63
	Ed. Sigerfoos	26 hours' work library	367	3 90
	Potts & McCoy	Pipe, etc	368	4 49
	Glock & Tallmadge	Supplies for campus	369	1 60
	Cols. Electric Supply Co.	Repairs	370	4 50
	Jas. L. Orr	Advertising school notes	371	3 50
	Cols. Cabinet Co.	Black-board veterinary dep't	372	5 00
	H. Braun, Sons & Co.	Supplies, physio'l dep't	373	8 62
	J. H. Bunnell & Co.	" phys'l dept	374	7 50
	Hann & Adair	1,000 circulars	375	2 95
	W. A. Carr	Services rendered	376	39 83
	D. S. Kellicott	Supplies, physio'l dep't	377	6 43
	A. H. Smythe	" "	378	5 83
	W. R. Kinnear & Co.	Repairs, Dr. Scott's	379	4 68
	Chas. O. Tracy & Co.	1 doz. blacking	380	1 08
	W. H. Scott	Services rend. by Pres't clerk	381	9 37
	A. P. Hammond, dep. cl'k	Copies of records	382	16 00
14	Ass'n Am Ag. C. & Ex. S.	Membership for '89-90	383	10 00
15	F. R. Evans	Ordered refunded by board	384	5 00
29	W. H. Scott	Salary, March, '90, installment	385	300 00
	Edward Orton	" "	386	225 00
	S. A. Norton	" "	387	225 00
	N. S. Townshend	" "	388	225 00
	S. W. Robinson	" "	389	225 00
	N. W. Lord	" "	390	200 00
	S. C. Derby	" "	391	225 00
	W. R. Lazenby	" "	392	225 00
	J. R. Smith	" "	393	225 00
	H. A. Weber	" "	394	225 00
	B. F. Thomas	" "	395	225 00
	Jno. W. Queen	" "	396	180 00

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Mar. 29	H. J. Detmers	Salary, March, '90, installment	397	$120 00
	Chas. E. Kilbourne	" "	398	50 00
	R. D. Bohannan	" "	399	225 00
	D. S. Kellicott	" "	400	225 00
	C. N. Brown	" "	401	200 00
	Benj. L. Bowen	" "	402	150 00
	E. A. Eggers	" "	403	180 00
	Geo. B Kauffman	" "	404	100 00
	Jas. Chalmers	" "	405	180 00
	Geo. W. McCoard	" "	406	140 00
	F. W. Sperr	" "	407	140 00
	Jos. N. Bradford	" "	408	140 00
	Jos. T. Whitney	" "	409	100 00
	Fred Keffer	" "	410	80 00
	J. A. Wilgus	" "	411	50 00
	Chas. P. Sigerfoos	" "	412	70 00
	Chas. W. Mesloh	" "	413	40 00
	W. F. Lavery	" "	414	20 00
	A. D. Haines	" "	415	60 00
	W. C. McCracken	Salary to April 1, 1890	416	75 00
	E. C. Grove	" "	417	40 00
	W. H. Holmes	Salary, March, '90, installment	418	40 00
	Olive B. Jones	" "	419	30 00
	F. W. Prentiss	Salary to April 1, 1890	420	33 34
	Jos. Taylor	" "	421	20 00
	W. Townsend	26 days' janitor, March, '90	422	39 00
	C. A. Roth	Salary to April 1, 1890	423	50 00
	W. A. Zeibold	1 horse, veterinary dep't	424	1 00
2	Thos. J. Godfrey	Trustees' exp's and Notary fees paid	425	17 95
	H. H. Blunt	124 h'r's work, sundry dep'ts	426	18 60
	"	132 " "	427	19 80
	H. T Mills	20 " mch'l dep't	428	3 00
3	W. F. Lavery	1 horse, veterinary dep't	429	7 00
4	Standard Coal Co.	On account coal delivered	430	169 33
	Brust & Bauch	Labor, etc., chemical dep't	431	10 25
5	Alexis Cope	Salary to April 1, 1890	432	166 66
	W. H. Scott	Paid for lectures, etc	433	54 20
	C. C. Smith	Salary, March, '90, installment	434	12 50
	O. Sells	1 horse, veterinary dep't	435	3 00
8	Capital City Mach. W'ks.	Supplies, mec'l dep't	436	24 79
11	Capital City Vault C. Co.	Cleaning vault, dormitory	437	10 00
12	R. D. Mershon	Salary, Jan., Feb., March, '90, installments	438	30 00
	B. F. Thomas	Supplies, elect. department	439	89 60
24	H. Braun, Sons & Co.	" "	440	3 00
	West. Elect. I. Co.	Repairs, etc., "	441	12 38
	The Falls Rivet & M. Co.	Supplies, "	442	41 57
	The U. S. Express Co.	Expressages, "	443	9 16
	Schaffer & Budenberg	Supplies, "	444	45 00
	The Ashcroft M'f'g Co.	" "	445	76 00
	Eimer & Amend	Supplies, mining department	446	23 55
	J. M. Everhart	" "	447	20 08
	Siebert & Lilley	" "	448	50 70
	Kauffman-Lattimer Co.	" "	449	53 01
	J. & H. Berge	" "	450	61 47
	H. C. Cady & Co.	" "	451	7 60

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Apr. 24	Glock & Tallmadge	Supplies, mining department	452	$ 60
	Col. Transfer Co	" "	453	8 70
	U. S. Express Co	" "	454	40
26	W. H. Scott	Salary, April, '90, installment	455	300 00
	S. A. Norton	" "	456	225 00
	N. S. Townshend	" "	457	225 00
	S. W. Robinson	" "	458	225 00
	N. W. Lord	" "	459	200 00
	S. C. Derby	" "	460	225 00
	W. R. Lazenby	" "	461	225 00
	J. R. Smith	" "	462	225 00
	H. A. Weber	" "	463	225 00
	B. F. Thomas	" "	464	225 00
	Jno. W. Queen	" "	465	180 00
	H. J. Detmers	" "	466	120 00
	C. E. Kelbourne	" "	467	50 00
	R. D Bohannan	" "	468	225 00
	David S. Killicott	" "	469	225 00
	C. Newton Brown	" "	470	200 00
	B. L. Bowen	" "	471	150 00
	E. A. Eggers	" "	472	180 00
	Geo. B. Kauffman	" "	473	100 00
	Jas. Chalmers	" "	474	180 00
	Geo. W. McCoard	" "	475	140 00
	F. W. Sperr	" "	476	140 00
	Jos. N. Bradford	" "	477	140 00
	J. T. Whitney	" "	478	100 00
	Fred. Kepper	" "	479	80 00
	J. A. Wilgus	" "	480	50 00
	C. P. Sigerfoos	" "	481	70 00
	C. W. Mesloh	" "	482	40 00
	A. D. Haines	" "	483	60 00
	Olive B. Jones	" "	484	30 00
	W. F. Lavery	" "	485	20 00
	J. R. Taylor	" "	486	20 00
	R. D. Mershon	" "	487	10 00
	W. R Lazenby	Paid for hauling gravel, etc	488	80 80
	"	Expenses attend'g Farmers' Ins'ts	489	13 70
28	F. W. Prentiss	Salary to May 1, 1890	490	33 33
	Alexis Cope	" "	491	166 67
	Eimer & Amend	Supplies, dep't gen'l chemistry	492	213 49
29	Siebert & Lilley	" Latin and Greek	493	56 60
	Am. Phil. Association	Copy of transactions for 1888	494	2 00
	A. H. Smythe	Dic. National Biography, 21	495	2 53
	P. W. Garfield	Vol. 8 America	496	5 50
	Library Bureau	Accession book	497	3 25
	Carl. Schœnhof	Books for library	498	65 59
	A. S. Clark	"	499	93
	M. A. Stiling	10 gals. coal oil	500	1 00
	Shilling Foundry Co	Castings mech'l department	501	1 40
	W. U. Telegraph Co	Messages	502	1 04
	Hershiser & Snyder	Lumber, mech'l department	503	5 00
	Quaker City Chair Co	6 doz. students' chairs	504	66 00
	Green & Joyce	1 gross chalk crayons	505	6 00
	Andrew Dobbie	1 doz. towels, general chemistry	506	2 00
	Ohio Furniture Co	Supplies, general chemistry	507	4 80
	C. O. Tracy & Co	1 letter book	508	1 10
	T. S. & J. D. Negus	Supplies, phys'l dep't	509	7 00

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Apr. 29	Nitschke Bros	Printing, etc	510	$23 25
	Glock & Tallmadge	1 scoop	511	2 00
	Hann & Adair	Stationery	512	16 80
	The Fish Press Brick Co.	Supplies, chemical department	513	10 50
	Borger Bros. & Co	" "	514	1 50
	W. S. Tidball	Lime, etc., repairs	515	14 40
	James Clark	Repairs, Dr. Townshend's	516	9 00
30	W. C. McCracken	Salary to May 1, 1890	517	75 00
May 1	W. H. Holmes	" "	518	40 00
	W. Townsend	Janitor, "	519	39 00
	Chas. A. Roth	Florist, "	520	50 00
	E. C. Grove	Fireman, "	521	40 00
3	C. C. Smith	Salary, April, '90, installment	522	12 50
5	Col. Post-office	Postage stamps	523	70 00
	J. H. Brigham	Expenses, trustee	524	15 20
7	Thos. A. Cowgill	"	525	30 70
	Thos. J. Godfrey	"	526	20 80
9	W. A. Olmsted	Supplies, dep't mining	527	211 48
	Acme Contracting Co	Cement floors, laboratory b'l'd'g	528	800 00
	W. S. Gray	Wearing floor lab. building	529	980 02
	Col. Dispatch	Advertising "	530	5 00
	W. A. Hiatt	94 hours' labor grading	531	14 10
10	H. J. Detmers	Attending Farmers' Institute	532	10 14
	W. F. Lavery	Making skeleton, veter'y dep't	533	60 00
	Col. Post-office	Postage stamps	534	40 00
	R. S. Foster	Sunday lecture	535	50 00
12	N. W. Storer	Services, battalion	536	5 00
	A. S. Eylar	98 hours' grading, etc	537	14 70
	W. H. Cooper	1 horse, veterinary department	538	4 50
23	Standard Coal Co	On account coal delivered	539	118 56
	H. Braun, Sons & Co	Supplies, physio. dep't	540	4 87
	Leonard Scott Pub. Co	Advertising	541	10 00
	The Century Co	Supplies	542	41 35
	W. R. Mehaffey, clerk	Costs case vs. Holmes	543	43 89
24	L. B. Wing	Expenses, trustee	544	28 75
	May M. Scott	19 hours' geo. museum	545	4 75
26	J. W. Yost & F. W. Fay	Fees for plans drawings, etc	546	475 00
	C. C. Miller	Expenses, trustees	547	12 10
	Col. Water-works	Water rents	548	145 24
	Isaac C. Aston	Papering Dr. Townshend's	549	8 55
27	Aston & Huff	Repairing stoves	550	5 55
28	Jas. Chalmers	Salary, May, '90, installment	551	180 00
	S. W. Robinson	" "	552	225 00
	Elmer G. Rice	Fees ordered refunded by board	553	10 00
	H. A. Surface	19½ hours geo. museum	554	3 90
29	J. A. Wilgus	Salary, May, '90, installment	555	50 00
30	W. R. Lazenby	" "	556	225 00
	Jas. King	Supplies, grading and paving	557	77 70
31	W. H. Scott	Salary, May, '90, installment	558	300 00
	S. A. Norton	" "	559	225 00
	N. S. Townshend	" "	560	225 00
	N. W. Lord	" "	561	200 00
	S. C. Derby	" "	562	225 00
	J. R. Smith	" "	563	225 00
	H. A. Weber	" "	564	225 00
	B. F. Thomas	" "	565	225 00
	J. W. Queen	" "	566	180 00
	H. J. Detmers	" "	567	120 00

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
May 31	Chas. E. Kilbourne	Salary, May, '90, installment	568	$50 00
	R. D. Bohannan	" "	569	225 00
	D. S. Kellicott	" "	570	225 00
	C. N. Brown	" "	571	200 00
	B. L. Bowen	" "	572	150 00
	E. A. Eggers	" "	573	180 00
	Geo. B. Kauffman	" "	574	100 00
	Geo. W. McCoard	" "	575	140 00
	F. W. Sperr	" "	576	140 00
	W. C. McCracken	" "	577	75 00
	E. C. Grove	Fireman to June 1, 1890	578	40 00
	W. H. Holmes	Watchman, to June 1, 1890	579	40 00
	Jos. N. Bradford	Salary, May, '90, installment	580	140 00
	Jos. F. Whitney	" "	581	100 00
	C. P. Sigerfoos	" "	582	70 00
	C. W. Mesloh	" "	583	40 00
	J. R. Taylor	" "	584	20 00
	W. F. Lavery	" "	585	20 00
	A. D. Haines	" "	586	60 00
	Olive B. Jones	" "	587	30 00
	C. A. Roth	" "	588	50 00
June 2	N. S. Townshend	Exp. attending Farmers' Inst	589	31 35
3	W. Townsend	Janitor to June 1, 1890	590	40 50
	Columbus Post-office	Postage stamps	591	10 00
5	F. W. Prentiss	Salary to June 1, 1890	592	33 33
	Alexis Cope	" "	593	166 67
	The Kauffman-L. Co	Sups. dept. general chemistry	594	906 96
	Cols. & H. C. & I. Co	On acccount coal delivered	595	71 89
	The Cornell-P. Chem. Co.	1 gas-bag	596	2 50
	Columbus Transfer Co	Freight & drayage, mining dept	597	2 68
	W. R. Kinnear & Co	Repairing roofs	598	17 85
	Columbus Transfer Co	Freight and drayage, elect. dept.	599	3 87
	Paul M. Lincoln	83 hours, elect. dept	600	12 45
	Capital Oil Co	Supplies elect. dept	601	2 25
	Fred. Keffer	Salary, May, '90, installment	602	80 00
	Anna N. Scott	Work in library	603	10 40
	Sidney A. Norton	Books for library	604	80 75
	Gustav E. Stechert	" "	605	12 60
	"	" "	606	65 39
	H. Mithoff & Co	Copper wire, elect. dept	607	8 30
	J. H. Bunnell & Co	Supplies, elect. dept	608	35 00
	Schultz Belting Co	" "	609	15 68
	Wm. Marshall	" "	610	38 00
	Cent. Union Tel. Co	Rent, 2 instruments	611	25 00
	Am. Express Co	Freight on package	612	7 30
	W. H. Scott	Customs charges on maps	613	5 95
	TheHaydenv.M. & M. Co.	Supplies, mech. dept	614	4 25
	Emier & Amend	" phys. dept	615	4 13
	Cnerrington & Robinson	Stamp and pad	616	1 70
	W. H. Scott	Livery, Sunday lecturer	617	2 00
	D. Felix	Cement	618	2 70
	J. W. Queen & Co	Supplies, physo. dept	619	91 83
	The Ohio State Jour. Co.	Advertising	620	4 50
	Freeman, Halm & McA	2 kitchen tables, bot. dept	621	4 50
	Glock & Tallmadge	Supplies, bot. dept	622	2 05
	Hann & Adair	Printing, etc	623	30 57
	Post Printing & Pub. Co.	Advertising, etc	624	5 00
	Siebert & Lilley	Receipt-book	625	7 25

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
June 7	Jos. T. Whitney	Salary, June, '90, installment	626	$100 00
	C. A. Roth	Florist to June 1, 1890	627	50 00
13	Columbus Post-office	Postage stamps	628	18 00
25	Alexis Cope	Salary to July 1, 1890	629	166 67
	Sidney A. Norton	" June, '90, installment	630	225 00
	R. D. Bohannan	" " "	631	225 00
	E. A. Eggers	" " "	632	180 00
	J. R. Smith	" " "	633	225 09
	N. W. Lord	" " "	634	200 00
	Chas. E. Miller	Expenses, trustee	635	27 00
	Thos. J. Godfrey	" " etc	636	24 95
	H. A. Weber	Salary, June, '90, installment	637	225 00
	Jno. W. Queen	" " "	638	180 00
26	Standard Coal Co	On account coal delivered	639	61 59
	Geo. W. McCoard	Salary, June, '90, installment	640	140 00
	Jos. N. Bradford	" " "	641	140 00
	J. R. Taylor	" " "	642	20 00
	D. S. Kellicott	" " "	643	225 00
	H. H. Blunt	201 hours' labor, campus	644	30 15
	"	223 hours' labor, department	645	33 45
	C. P. Sigerfoos	Salary, June, '90, installment	646	70 00
	"	Supplies, physiol. dept	647	12 20
	Door, Sash & Lumber Co.	Furniture, etc., laboratory bld'g	648	2,500 00
	Jas. Chalmers	Salary, June, '90, installment	649	180 00
	R. D. Mershon	" "	650	20 00
	C. E. Kilbourne	" "	651	50 00
	P. M. Lincoln	30 hours' labor, mech. dept	652	4 50
	W. F. Lavery	Salary, June, '90, installment	653	20 00
	"	Skeleton of camel, vet. dept	654	60 00
	W. H. Scott	Salary, June, '90, installment	655	300 00
27	"	Paid Pres. Elliot's lecture, etc	656	18 00
	C. W. Mesloh	Salary, June, '90, installment	657	40 00
	Percy Martin	Services Q.-M. battalion	658	10 00
	D. M. Massie	Expenses, trustee	659	4 30
	B. L. Bowen	Salary, June, '90, installment	660	150 00
	Geo. C. Schaeffer	" "	661	25 00
	S. C. Derby	" "	662	225 00
	H. J. Detmers	" "	663	120 00
	Pneu. Watch. Clock Co	Detectors for lab. buildings	664	75 00
	Olive B. Jones	Salary, June, '90, installments	665	30 00
	C. N. Brown	" "	666	200 00
	A. H. Tuttle	Expenses, etc., annual address	667	50 00
	W. A. Carr	General repairs, etc	668	29 00
	W. U. Telegraph Co	Line service and messages	669	6 38
28	Geo. B. Kauffman	Salary, June, '90, installment	670	100 00
	Wm. A. Hiatt	18 hours' labor, campus	671	2 70
	A. D. Haines	Salary, June, '90, installment	672	60 00
	J. A. Wilgus	" "	673	50 00
	F. Keffer	" "	674	80 00
30	A. W. Jackson & Son	Supplies, physio. dept	675	5 25
	" "	" library	676	26 00
	N. S. Townshend	Salary, June, '90, installment	677	225 00
	S. W. Robinson	" "	678	225 00
July 1	Cols. Water-works	Exchange of meter	679	1 90
	W. Townsend	25 days' janitor	680	37 50
	W. R. Lazenby	Salary, June, '90, installment	681	225 00
	Jas. Kelley	L.kpr. Jan .Feb.Mar.Ap.May '90	682	200 00
	Jas. King	Grading	683	169 10

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
July 1	C. P. Zaner	Filling 32 diplomas	684	$10 00
	W. C. McCracken	Engineer to July 1, 1890	685	75 00
	W. H Holmes	Watchman "	686	40 00
	E. C. Grove	Fireman "	687	40 00
2	Siebert & Lilley	Stationery	688	36 50
	Lantern Pub. Co	Advertising	689	40 00
3	F. W. Sperr	Salary, June, 1890, installment.	690	140 00
5	Samuel Zinn	Supplies electrical b'ld'g	691	3 37
	B F. Thomas	Salary, June, 1890, installment.	692	225 00
14	F. W. Prentiss	" to July 1, 1890	693	33 33
15	W. R. Kinnear & Co	Supplies, etc., mining dep't	694	70 00
	Cap'l Vault Cleaning Co.	Cleaning vault	695	10 00
16	Amer. Publishing Co	One city map	696	7 00
17	Col. & H. C. & I. Co	On account coal delivered	697	91 75
	Bat'n Merr'l Dec. House	Papering, Prof. Kellicott	698	9 90
	M. C. Lilley & Co	Repairing flag	699	4 00
	Potts & McCoy	Repairs	700	39 57
	Glock & Tallmage	Hardware and glass	701	12 57
	Louis Fink	Ordinary repairs	702	5 50
	Gustav E. Stechert	Books for library	703	66 31
	Chas. Garnes	Material and labor, cistern	704	22 50
22	W. R. Kinnear & Co	" " repairs	705	7 66
17	Amer. Philological Soc.	Volume 20	706	2 50
	Siebert & Lilley	Book-binding	707	1 80
	A. H. Smythe	Books for library	708	5 00
	Am. So. Mech. Eng'ring	Binding volume	709	1 25
	Eimer & Amend	Supplies mining dep't	710	5 55
	J. & H. Berge	" "	711	60 20
	Kauffm'n, Lattim'r & Co.	" "	712	17 25
	Potts & McCoy	" elec. dep't	713	2 18
	H. Braun, Sons & Co	" "	714	1 00
	U. S. Express Co	Fr't supplies, mining dep't	715	5 25
	Weston Elec'l Inst. Co	Supplies, electrical dep't.	716	135 00
	H. H. Blunt	Work at institution	717	3 50
	Kaiser & Son	Painting lab. building	718	700 00
	R. D. Bohannan	Examinat'n H. sch'l, Morrow	719	7 00
	Green, Joyce & Co	Ribbons for diplomas	720	5 58
	The Westbote Co	Printing	721	9 50
	Neil House	Prest. Eliot's hotel bill	722	2 50
	Col. Picture & Frame Co.	Pictures, etc., drawing dep't	723	17 45
	H. Braun, Sons & Co	Supplies, veterinary dep't	724	1 55
	D. S. Kellicott	" physiol. "	725	8 32
	H. Braun, Sons & Co	" " "	726	16 11
	Bausch, Lomb O. Co	"	727	25 13
	Educational Supply Co	" zool. dep't	728	9 18
	Geo. Bellows	Services rendered	729	5 00
	W. J. Lacy	Horse hire decoration day	730	6 00
	Gazette Printing Co	Printing	731	2 50
	R. E. Jones	Carriages University day	732	7 00
	J. R. Pierson	Horse hire decoration day	733	6 00
	The Cent'l O. Paper Co	100,000 sheets paper	734	35 00
	Kilbourne, Jones & Co	Supplies for mechan'l dep't	735	26 20
	Hann & Adair	Printing supplement catalogue	736	7 60
	C. N. Brown	Supplies, engineering dep't	737	2 75
	Glock & Tallmage	" civil engin'ring dep't	738	3 92
	Monyp'y, Hamm'd & Co.	" for university	739	6 50
	Geo. H. Twiss	" for battalion	740	1 05
	Wm. Burdell	½ dozen dressing for battalion	741	1 25
	Col. Gas L't & Coke Co.	Supplies, electrical dep't	742	3 00

STATEMENT II—Continued.

Date.	To whom paid.	On account of.		Amount.
1880.				
July 17	C. H. Evans	Advertising, college directory	743	$5 00
	The Strobridge Lith. Co.	30 diplomas	744	37 50
	The Enquirer Co	Advertising	745	6 75
	The Cent'l O. Paper Co	Supplies	746	1 20
	Col. & Hock. C. & I. Co	On account coal delivered	748	64 90
	Anna Neill Scott	27 hours' work in library	749	5 40
	W. A. Hiatt	25 hours' work in campus	750	3 75
	H. H. Blunt	66 hours' work in campus	751	9 90
	H. P. Armby	Expt. Am. Ass'n Agr. colleges	752	25 00
	The Standard Coal Co	On account coal delivered	747	21 13
	C. T. Hirtler	Brickwork boiler house	753	29 39
	S. H. Guss	41 hours' work excavating, etc	754	6 15
21	James Clark	Ordinary repairs	755	11 50
	James King	"	756	8 80
	G. W. Crandell	"	757	3 00
	Glock & Tallmadge	"	758	13 27
	Isaac C. Aston	Paper hanging, etc	759	23 97
	W. H. Holmes	Services as watchman	760	40 00
	James Kelly	Lawn keeper of campus	761	40 00
	A. W. Livingston's Sons	Improvement of campus	762	3 50
	James King	Grading and paving	763	78 60
	W. A. Carr	Library book case	764	36 00
	H. H. Blunt	7 days 4 hours' work excav'g	765	11 10
	O. S. U. Glee Club	Commencement music	766	25 00
	Horace H. Blunt	Labor in departments	767	12 30
	Krauss & Meehan	Matting and brass ends	768	37 86
	Cent'l Un. Tel. Ex	Rent of instruments	769	25 00
	J. W. Dann Manf'g Co	Rent 40 doz. chairs, commencem't	770	31 50
	The Century Co	Advertising in July, 1890	771	7 50
	Hann & Adair	Printing	772	30 56
	Z. L. White & Co	Muslin and flannel	773	5 40
	Nitschke Bros	1200 commencement programs	774	13 50
	E. C. Grove	Fireman July, 1890	775	40 00
	Paul M. Lincoln	12 hours' services	776	2 10
	Columbus Dispatch	Advertising	777	5 00
	Leader Printing Co	"	778	5 33
	The Post Pr'g & Pub Co	"	779	5 00
	Paul M. Lincoln	2 days' work	780	3 00
	The Ohio State Journal	Advertising	781	5 04
	Toledo Blade Co	"	782	6 00
26	Alexis Cope	Salary to Sept. 1, 1890	783	166 67
	F. W. Prentiss	" Aug. 1, 1890	784	33 33
28	C. A. Roth, florist	"	785	100 00
Aug. 7	Door, Sash & Lumber Co.	Furniture for laboratory	786	1,500 00
July 31	W. C. McCracken	Sal. as engineer to Aug. 1, 1890	787	75 00
Aug. 5	Kelly & Co	Plumbing, etc	788	1,600 00
	Thomas J. Godfrey	Traveling expenses	789	14 70
7	Wm. H. McCoy	9 days' painting	790	20 25
6	W. F. Pfleger	5 " "	791	10 00
	H. J. Detmers	Spencer objective	792	67 50
7	W. A Carr	Carpenter work	793	41 95
	H. H. Blunt	4¾ days' labor	794	7 12
	C. G. Anderson	Chemical lab. blind	795	185 00
	H. O Oster	Repairs, etc	796	19 25
9	A. S. J. Eylar	9 days' painting	797	18 00
	C. B Morrey	7 "	798	11 50
	John Nesbit	5½ "	799	8 87
	W. S. Gray	Gen. carp. work lab. building	800	607 43

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Aug. 11	Kaiser & Son	Painting, chem'l lab	801	$267 00
	Brust & Bauch	Excavating, etc	802	76 00
	O. B. Thompson	Plastering	803	156 00
	Borger Bros. & Co	Steam heating, etc	804	60 00
	Cols. Steam Pipe Co	" "	805	3 90
	Brust & Bauch	Repairing culvert	806	38 76
	Glock & Tallmadge	Hardware, nails, etc	807	12 32
	S. H. Guss	Ordinary repairs	808	4 50
	R. L. Polk & Co	Copy City Directory	809	4 00
	Siebert & Lilley	Stationery	810	2 50
	Edward Orton	Specimen fossils	811	15 00
	The Century Co	Advertising in August	812	7 50
	Hann & Adair	5,000 circulars	813	29 10
	N. Munsey	Photo map solar spectrum	814	12 50
	Western Union Tel. Co	Messages	815	75
	J. P. Weisman & Co	Ribbon	816	5 64
	Cols. Board of Trade	Use of auditorium	817	25 00
	J. M. Westwater	Pendants and globes	818	7 00
	Hann & Adair	500 Prof. Tuttle's Address	819	34 33
	Enquirer Co	Advertising	820	7 50
	Western Union Tel. Co	Line service	821	2 50
	J. M. Allen	Hack service	822	2 50
	R. L. Polk & Co	City Directory	823	4 00
Oct. 8	Julia Haynes	4½ days' cleaning buildings	824	4 50
Aug. 13	J. W. Yost & F. W. Fay	Balance due as architects	825	109 91
	Foster & Shaw	Painting, lab. furniture	826	350 00
18	W. A. Carr	Carpenter work	827	5 00
	W. H. McCoy	2½ days' painting	828	5 06
	Cols. post office	Postage	829	18 00
22	Thos. G. Neski	Repairs per contract	830	200 00
25	Alexis Cope	Salary to Sept. 1, 1890	831	166 67
	T. W. Broomhall	5 days' carpentering	832	11 25
Sept. 2	W. C. McCracken	Salary as engineer for Aug	833	75 00
	E. C. Grove	" fireman "	834	40 00
	W. H. Holmes	" watchman "	835	40 00
	Jas. Kelley	" lawn keeper for Aug	836	40 00
	W. C. Werner	Services as supt. green house	837	50 00
	Thomas J. Godfrey	Traveling expenses	838	10 80
3	W. F. Phleger	Ordinary repairs	839	49 00
	J. E. Nesbitt	"	840	42 87
	A. H. Kennedy	"	841	25 72
	A. S. J. Eylar	"	842	37 00
	C. B. Morrey	"	843	52 00
	F. W. Prentiss	Salary to Sept. 1, 1890	844	33 33
	J. E. Noble	Ordinary repairs	845	40 62
	S. H. Guss	18 days' cleaning buildings	846	27 00
	Laura Subeck	17 " "	847	17 00
	Julia Haynes	17½ " "	848	17 50
	Madge Forgner	18 " "	849	18 00
	Anna Doyle	18 " "	850	18 00
	F. W. Wells	Soap and sapolio	851	10 50
	Hann & Adair	Envelopes, cards, etc	852	34 08
	Glock & Tallmadge	Wheelbarrow, etc	853	3 25
	McClelland & Co	Supplies	854	1 60
	Door, Sash & Lumber Co	Drawing tables	855	90 00
	Post Printing & Pub. Co	Advertising	856	16 50
	Cols. Transfer Co	Transportation	857	47 38
	Toledo Bee Co	Advertising	858	6 40

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Sept. 3	Leader Printing Co.	Advertising	859	$4 98
	W. G. Benham	Music	860	50
	Nat'l Labor Tribune	Advertising	861	4 00
	Forum Publishing Co.	"	862	4 75
	E. S. Ritchie & Sons	Instruments phys. dept.	863	20 94
	The Century Co.	Advertising	864	7 50
	Haydenville M. & M. Co.	Fuel	865	4 25
	J. M. Allen	Hack hire	866	3 50
4	Moore, Adams & Co.	Lumber	867	39 89
	" "	"	868	44 10
	Robert K. Beach	6½ days' painting	869	11 37
	W. C. McCracken	2 brass couplings	870	1 90
	Glock & Tallmadge	Glass and hardware	871	2 00
	Kinnear & Co.	Repairs, roofs	872	64 10
	Door, Sash & Lumber Co.	" door	873	1 50
	Milton L. Shafler	" steps	874	3 25
	Schwartz Plumbing Co.	" plumbing	875	5 45
	Batterson & Merrell	Papering building	876	205 00
	Glock & Tallmadge	Glass and hardware	877	11 53
	Pender & Co.	Lumber	878	12 02
	James Clark	Plastering, etc.	879	339 00
	Potts & McCoy	Ordinary repairs	880	1 15
	Cols. Transfer Co.	Transportation	881	5 61
	Ashcroft M'f'g Co.	Repairs on electrical inst.	882	3 00
	Brush Electric Co.	App. for electrical engineering	883	2 25
	The Am. Bell Telp. Co.	Use of instruments	884	16 75
	Kelley & Co.	Plumbing, laboratory desks	885	1,300 00
	J. C. Early	Improving campus	886	5 62
	Wm. C. Werner	Salary for September	887	50 00
	Cols. Transfer Co.	Hauling freight	888	6 11
	Jas. King	Grading around chem'l dep't	889	22 50
	Potts & McCoy	Improvement steam heating	890	65 67
	W. S. Gray	Carp. work, laboratory	891	13 50
	W. A. Carr	Improvement steam heating	892	12 50
	Foster & Shaw	Painting, furniture, etc.	893	150 00
	C. P. Fox	347 hours' work cleaning app.	894	52 05
	J. & H. Berge	Repairing instruments	895	39 75
	Cols. Transfer Co.	Hauling freight	896	5 08
	Kauffman-Lattimer Co.	Chemicals	897	32 58
27	Olive B. Jones	Salary, Sept., '90, installment	898	30 00
	C. B. Morrey	" "	899	25 00
	C. L. Arnold	" "	900	25 00
	R. D. Mershon	" "	901	50 00
	A. D. Haines	" "	902	60 00
	W. F. Lavery	" "	903	50 00
	J. R. Taylor	" "	904	40 00
	C. W. Mesloh	" "	905	70 00
	C. P. Sigerfoos	" "	906	80 00
	J. A. Wilgus	" "	907	80 00
	Frederick Keffer	" "	908	100 00
	Jos. T. Whitney	" "	909	100 00
	Jos. N. Bradford	" "	910	140 00
	F. W. Sperr	" "	911	200 00
	Geo. W. McCoard	" "	912	140 00
	B. L. Bowen	" "	913	150 00
	Jas. Chalmers	" "	914	180 00
	Geo. B. Kauffman	" "	915	150 00
	Ernst A. Eggers	" "	916	255 00

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Sept. 27	C. N. Brown	Salary, Sept., '90, installment	917	$225 00
	D. S. Kellicott	" " "	918	225 00
	R. D. Bohannan	" " "	919	225 00
	Geo. W. Knight	" " "	920	225 00
	H. J. Detmers	" " "	921	145 00
	B. F. Thomas	" " "	922	225 00
	H. A. Weber	" " "	923	225 00
	J. R. Smith	" " "	924	225 00
	W. R. Lazenby	" " "	925	225 00
	Samuel C. Derby	" " "	926	225 00
	N. W. Lord	" " "	927	200 00
	S. W. Robinson	" " "	928	225 00
	N. S. Townshend	" " "	929	225 00
	Sidney A. Norton	" " "	930	225 00
	Edward Orton	" " "	931	225 00
	W. H. Scott	" " "	932	300 00
25	Col. Post-office	Stamps	933	10 00
Oct. 1	F. W. Prentiss	Salary to October 1, 1890	934	33 34
	Alexis Cope	" " "	935	166 66
	E. C. Grove	Services as fireman, Sept., 1890	936	40 00
	Wash. Townsend	" janitor, "	937	22 67
2	W. C. McCracken	" engineer, "	938	75 00
	W. H. Holmes	" watchman, "	939	40 00
7	L. B. Wing	Exp. meetings of board, etc.	940	38 90
8	Madge Forquer	4½ days' cleaning	941	4 50
	Anna Doyle	"	942	4 50
7	Door, Sash & Lumber Co	Furniture	943	700 00
8	J. W. Yost, & F. W. Fay	Architects	944	200 00
	A. J. Eylar	10½ days' painting	945	21 00
	Frank Early	Janitor work	946	7 65
	A. J. Eylar	"	947	6 70
	Kelly & Co	Plumbing lab. desks	948	1,000 00
	J. E. Noble	2 wardrobes, dormitory	949	21 00
9	W. F. Phleger	Painting "	950	24 90
	Am. Dist. Telegraph Co.	Rent, 6 boxes	951	150 00
	W. S. Carghhy	Repairing	952	5 75
	Madison Jackson	12½ days' cleaning building	953	18 75
	S. H. Guss	7½ " "	954	11 25
	"	5½ days' work repairing	955	8 25
10	Moore & Adams	Lumber	956	62 31
	"	"	957	14 29
	The Stacy M'f'g Co	New gas holder	958	483 83
	J. W. Bannon	Costs, expenses, etc., of surveying	959	76 36
	"	" " "	960	41 45
	A. H. Kennedy	10½ days' painting	961	18 37
	L. M. Carter & Co	Carpenter work	962	12 00
	C. B. Morrey	4½ days' painting	963	9 00
11	W. F Bay	Services as visitors' guide	964	6 15
	H. O. Oster	65 hours' labor	965	9 75
	Ohio Sonntagsgast	Advertising	966	4 00
	Jno. Nesbit	7½ days' painting	967	13 12
	Chas. Woodruffe	28½ days' carp. work	968	64 12
	Robert H. Hassler	65 hours' labor in laboratory	969	9 75
	W. & L. E. Gurley	Equip. elect. build'g	970	5 09
	Jas. King	Grading and paving	971	22 75
	The C. & Hock. C. & I. Co	Coal	972	25 23
	H. D. Turney & Co	"	973	88 57
	F. E. Rosette	Painting sign	974	1 75

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Oct. 11	Fred. Keffer	Lab. exp	975	$7 50
	Col. Transfer Co	Drayage	976	20 54
	C. T. Hirtler	Pointing and relaying chimneys	977	151 08
	Thos. G. Neski	Rep. water-closets	978	211 00
	L. D. Evans	"	979	28 50
	Batterson & Merrill	Papering	980	75 47
	W. S. Hyatt	Janitor work	981	14 35
13	Col. Post-office	Stamps	982	10 00
	Brust & Branch	Ordinary repairs	983	29 25
	Aston & Huff	"	984	51 60
	H. Braun, Sons & Co	"	985	219 89
	Glock & Tallmadge	"	986	20 58
	Potts & McCoy	"	987	2 25
	W. R. Kinnear & Co	"	988	120 83
	Alexis Cope	Money ad. to labor, gas holder	989	80 00
	Col. Transfer Co	Drayage	990	11 17
	Borger Bros. & Co	Taking out old gas holder	991	26 50
	Potts & McCoy	Fittings for boilers	992	119 37
	Col. Transfer Co	Drayage	993	15 44
	Standard Oil Co	Bbl. gasoline	994	9 45
	H. Cole	Instruments	995	392 64
	J. & H. Berge	Equipt., etc., school of mines	996	684 52
	W. N. Wight	Office desks	997	87 00
	Foster & Shaw	Painting furniture	998	275 00
	Quaker City Chair Co	Chairs lab. building	999	387 25
	J. & H. Berge	Eq. Ag. chem. lab	1000	371 62
	Alexis Cope	Traveling expenses	1001	11 25
	E. L. Abbott	Services as usher, State fair	1002	6 15
14	A. S. Pearl	Services at bureau of inf	1003	3 82
15	U. S. Express Co	Freight on packages	1004	3 95
16	Samuel Zinn	Brass castings	1005	7 12
	B. F. Thomas	2 yrs. sub. to Elect. Engineering	1006	4 00
17	Robt. H. Hassler	25 hours' work	1007	3 75
	Harrington & Co	Clock springs	1008	3 00
	Glock & Tallmadge	Brass rods	1009	3 27
	Gong Bell M'f'g Co	6 gongs	1010	10 80
	E. Orton	Supplies, geol. museum	1011	64 48
	Kauffman-Lattimer Co	50 lbs. chromic acid	1012	12 00
	Glock & Tallmadge	Mech. lab	1013	18 77
	Hershiser & Snyder	"	1014	9 06
	Z. L. White & Co	Supplies, president's room	1015	2 70
	Geo. H. Twiss	Stationery	1016	2 95
	A. W. Jackson	Binding, etc	1017	10 50
	Siebert & Lilley	Blank books	1018	54 50
	Hann & Adair	Printing, etc	1019	6 80
	J. C. Early	Labor	1020	2 25
18	Glock & Tallmadge	Stationery	1021	1 00
	The Strobridge Lith. Co	Letter heads and envelopes	1022	23 50
	Central Union Tele. Co	Telephone service	1023	25 50
	Cols. Transfer Co	Drayage	1024	41 33
	W. S. Carlisle	Supplies, coal oil	1025	1 20
	Blackwood, Green & Co	Supplies	1026	3 75
	Howard Baker	Ass't watchman	1027	1 25
	R. W. Beck	Sign	1028	2 50
	W. H. Scott	Supplies	1029	2 15
	F. W. Rane	Services rendered	1030	2 85
	J. S. Hine	13 hours' services rendered	1031	2 40
	Ohio State Journal Co	Advertising	1032	33 48

STATEMENT II—Continued.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Oct. 18	Purvis & Kress	Advertising	1033	$2 00
	The Educational Sun	"	1034	2 00
	Columbus Dispatch	"	1035	7 83
	D. P. Fulmer	"	1036	1 50
	The Nation	"	1037	2 85
	The Westbote Co	"	1038	5 00
	The Post Pr'g & Pub. Co.	"	1039	4 00
25	S. C. Derby	Salary, October, '90, installm't	1040	225 00
	C. B. Morrey	" "	1041	25 00
	W. H. Scott	" "	1042	300 00
	Edward Orton	" "	1043	225 00
	S. A. Norton	" "	1044	225 00
	N. S. Townshend	" "	1045	225 00
	S. W. Robinson	" "	1046	225 00
	N. W. Lord	" "	1047	200 00
	W. R. Lazenby	" "	1048	225 00
	J. R. Smith	" "	1049	225 00
	H. A. Weber	" "	1050	225 00
	B. F. Thomas	" "	1051	225 00
	G. W. Knight	" "	1052	225 00
	H. J. Detmers	" "	1053	145 00
	R. D. Bohannan	" "	1054	225 00
	D. S. Kellicott	" "	1055	225 00
	C. N. Brown	" "	1056	225 00
	B. L. Bowen	" "	1057	150 00
	E. A. Eggers	" "	1058	225 00
	Geo. B. Kauffman	" "	1059	150 00
	Jas. Chalmers	" "	1060	180 00
	Geo. W. McCoard	" "	1061	140 00
	F. W. Sperr	" "	1062	200 00
	J. N. Bradford	" "	1063	140 00
	J. F. Whitney	" "	1064	100 00
	Fred Keffer	" "	1065	100 00
	J. A. Wilgus	" "	1066	80 00
	C. P. Sigerfoos	" "	1067	80 00
	C. W. Mesloh	" "	1068	70 00
	J. R. Taylor	" "	1069	40 00
	W. F. Lavery	" "	1070	50 00
	A. D. Haines	" "	1071	60 00
	R. D. Mershon	" "	1072	50 00
	C. L. Arnold	" "	1073	25 00
	W. C. Werner	" "	1074	50 00
	Olive B. Jones	" "	1075	30 00
27	F. W. Prentiss	Salary to 1st Nov., 1890	1076	33 33
	Alexis Cope	" "	1077	166 67
31	W. C. McCracken	Engineer, to Nov. 1, 1890	1078	75 00
	E. C. Grove	Fireman, " "	1079	40 00
Nov. 11	W. Townsend	Janitor, " "	1080	40 00
	W. H. Holmes	Watchman, " "	1081	40 00
	Jas. Kelley	Lawnkeeper, Sept. and Oct.	1082	80 00
	L. B. Wing	Expenses trustees	1083	2 55
	W. F. Phleger	21 h'rs and 6 nights' services	1084	11 70
	W. S. Hiatt	89 h'rs chemical laboratory	1085	13 35
	A. Eyler	" "	1086	13 35
	Frank Early	" "	1087	13 35
	R. H. Hassler	11 " "	1088	1 65
	The Makio	Advertising	1089	15 00
	Arthur N. French	22¾ h'rs services rendered	1090	3 40
	N. H. Brown	51½ h'rs mech'l laboratory	1091	7 68

STATEMENT II—Concluded.

Date.	To whom paid.	On account of.	No.	Amount.
1890.				
Nov. 11	Krauss & Meehan	Supplies mining department	1092	$2 00
	H. D. Turney & Co	Coal delivered	1093	167 13
	Col. Hocking C. & I. Co.	Coal delivered	1094	78 10
	J. Rath	Rep. furnaces	1095	33 55
	Aston & Huff	" stoves	1096	46 20
	Glock & Tallmadge	Hardware and nails	1097	7 58
	D. R. Rockey & Son	Rep. pumps	1098	4 50
	Moore & Adams	"	1099	21 97
	J. E. Noble	Lumber for repairs	1100	8 25
	L. D. Evans	Rep. plastering	1101	1 50
	Chas. Woodruff	27 days' carp. repairs	1102	60 75
10	Eagle Refining Co	5 gals. cyl. oil	1103	4 50
	Col. Closet Co	6 lbs. brass castings	1104	1 50
	Door, Sash & Lumber Co.	4 drawing tables	1105	36 00
	J. & H. Berge	Eq. Agr. chem. lab.	1106	55 33
	Krauss & Meehan	Window shades lab. building	1107	61 50
	A. M. Jelliff	Extra keys lab. building	1108	7 50
	Ormond Stone	Books for library	1109	2 00
	J. H. Walfekoetter	" "	1110	6 75
	Geo. W. Knight	" "	1111	11 83
	J. R. Smith	" "	1112	3 10
	D. Van Nostrand & Co.	" "	1113	61 20
	Gustav E. Stecher	" "	1114	45 29
	A. H. Smythe	" "	1115	373 14
				$90,580 05
15	By balance			2,564 84
				$93,144 89

STATEMENT III.

A LIST OF EMPLOYES AND COMPENSATION.

In compliance with section 7 of the organic act passed by the legislature of Ohio May 1, 1878, which requires a list of "the number of professors, officers, teachers and other employes, and the position and compensation of each, to be reported annually," the following is submitted:

W. H. Scott,	President and Professor of	Philosophy	$3,000 00
Edward Orton,	Professor of	Geology	2,250 00
Sidney A. Norton,	"	General Chemistry	2,250 00
Norton S. Townshend,	"	Agriculture	2,250 00
David S. Kellicott,	"	Zoology and Comp. Anatomy	2,250 00
Stillman W. Robinson,	"	Mechanical Engineering	2,250 00
Nathaniel W. Lord,	"	Mining and Metallurgy	2,000 00
Samuel C. Derby,	"	Latin	2,250 00
William R. Lazenby,	"	Horticulture and Botany	2,250 00
Josiah R. Smith,	"	Greek	2,250 00
Henry A. Weber,	"	Agricultural Chemistry	2,250 00
Benjamin F. Thomas,	"	Physics	2,250 00
R. D. Bohannan,	"	Mathematics and Anatomy	2,250 00
Geo. W. Knight,	"	History and Political Science	2,250 00
H. J. Detmers,	"	Veterinary Surgery	1,200 00
C. Newton Brown,	"	Civil Engineering	2,250 00
Benjamin L. Bowen,	Asso. Prof.	French Language and Literature	1,500 00
Ernest A. Eggers,	"	German " "	2,250 00
James Chalmers,	"	English " "	1,800 00
George B. Kauffman,	"	Pharmacy	1,000 00
George W. McCoard,	Assistant Professor	Mathematics	1,400 00
Joseph T. Whitney,	Assistant in	Physics	1,000 00
Joseph N. Bradford,	"	Drawing	1,400 00
James A. Wilgus,	"	Latin and President's clerk	800 00
Charles P. Sigerfoos,	"	Zoology and Comp. Anatomy	800 00
Charles W. Mesloh,	"	German	700 00
A. D. Haines,	"	Mechanical Engineering	600 00
William F. Lavery,	"	Veterinary	500 00
Joseph R. Taylor,	"	Drawing	400 00
Frederic Keffer,	"	Chemistry	1,000 00
R. D. Mershon,	"	Physics	500 00
C. L. Arnold,	"	Mathematics	250 00
C. B. Morrey,	"	Latin	250 00
L. M. Bloomfield,	"	Agr. Chem	200 00
Clair A. Dye,	"	Gen'l Chem	400 00
F. S. Kershaw,	"	English	125 00
Olive B. Jones,	Assistant	Librarian	300 00
W. C. McCracken,		Engineer	900 00
Edward C. Grove,		Fireman	480 00
W. C. Werner,	Assistant in	Botany, etc	600 00
Fred. H. Brewer,		Night Watchman	480 00
Alexis Cope,		Secretary	2,000 00
F. W. Prentiss,		Treasurer	500 00
Washington Townsend,		Janitor	480 00
Total			$57,865 00

COLUMBUS, OHIO, *Nov.* 20, 1890.

To the Board of Trustees of the Ohio State University:

The undersigned finance committee have, in obedience to your instructions, examined the accounts and vouchers of the treasurer of the university, for the fiscal year ending Nov. 15, 1890, and carefully compared them with the records and vouchers in possession of the secretary, and hereby certify that the report of the treasurer submitted to the board for the said last fiscal year is correct.

T. J. GODFREY,
D. M. MASSIE,
Finance Committee.

CATALOGUE.

CATALOGUE

OF THE

OHIO STATE UNIVERSITY,

COLUMBUS, OHIO.

1890-91

Columbus, Ohio.
The Westbote Co., State Printers
1891.

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1891.

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S.	M.	T.	W.	T.	F.	S.
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4	5	6	7	8	9	10
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FEBRUARY.

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MARCH.

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MAY.

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JUNE.

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1891.

JULY.

S.	M.	T.	W.	T.	F.	S.
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AUGUST.

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SEPTEMBER.

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OCTOBER.

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NOVEMBER.

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DECEMBER.

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1892.

JANUARY.

S.	M.	T.	W.	T.	F.	S.
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FEBRUARY.

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MARCH.

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APRIL.

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MAY.

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JUNE.

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Announcements.

		1891.
Second term begins	Wednesday,	January 7.
University day	Saturday,	February 21.
Second term ends	Wednesday,	April 1.
Third term begins	Wednesday,	April 8.
Baccalaureate sermon	Sunday,	June 21.
Entrance examinations, 9 a. m.	Monday, Tuesday,	June 22, 23.
Exercises of the literary societies	Monday,	June 22.
Class day exercises	Tuesday,	June 23.
Commencement	Wednesday,	June 24.
Entrance examinations, 9 a. m.	Monday, Tuesday,	September 14, 15.
First term begins: Registration day	Wednesday,	September 16.
Thanksgiving recess	Thursday,	November 26.
First term ends	Wednesday,	December 23.
		1892.
Second term begins	Wednesday,	January 6.
Second term ends	Wednesday,	March 30.
Third term begins	Wednesday,	April 6.
Commencement	Wednesday,	June 22.

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PROFESSOR EDWARD ORTON.

STATE SEALER OF WEIGHTS AND MEASURES.

PROFESSOR BENJAMIN F. THOMAS.

STUDENTS.

GRADUATE STUDENTS.

Arnold, Charles Lincoln, B. Sc., Columbus	*Science.*
Detmers, Frieda, B. Sc., Columbus	*Science.*
Grimsley, George Perry, B. A., Columbus	*Geology and Mineralogy.*
Morrey, Charles B., B. A., Chester Hill	*Anatomy and Physiology.*
McPherson, William H., Toledo	*Chemistry.*
Scott, Mary O., B. A., Columbus	*Physiology.*
Sparks, Edwin E., State College, Pa	

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SENIORS.

Beach, Margaret Alice	B. Ph	Columbus.
Bloomfield, Lloyd Morris	B. Ag	Marlboro.
Boyd, James Ellsworth	B. Sc	Brush Creek.
Burns, James Ferguson	C. E	Canton.
Cole, George Nathan	E. E	Columbus.
Doney, Carl Gregg	B. Sc	Columbus.
Fischer, Julius Henry Rex Paul	B. Ag	Loveland.
Hubbard, Ralph Newton	B. Sc	Columbus.
Jones, Aaron Wesley	B. Sc	Columbus.
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Mock, George Herbert	B. Sc	Columbus.
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O'Kane, Sarah Eliza	B. Ph	Columbus.
Pomerine, Frank Etherington	B. Ph	Coshocton.
Rane, Frank William	B. Ag	Whitmore Lake, [Mich.
Rees, William Daniel	B. A	Columbus.
Ruppersberg, Emma Anna	B. Sc	Columbus.
Sigerfoos, Edward	B. Ph	Arcanum.
Storer, Norman Wilson	E. E	Orangeville.
Surface, Harvey Adam	B. Sc	Waynesville.
Weaver, Mary Luretta	B. Ph	Columbus.
Whitacre, Horace J	B. Sc	Morrow.
Wood, Francis Carter	B. Sc	Columbus.

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Evans, Ernest	B. Sc	Friendship.

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Goodell, Ralph Spencer	C. E.	Columbus.
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Guss, Sherman Hamlin	B. A.	Middleport.
Hatcher, Edwin Brush	B. Sc.	Columbus.
Houston, Anna Christine	B. Ph.	Marysville.
Johnston, George Edward	C. E.	Empire.
Johnston, Herbert Lincoln	E. E.	Cincinnati.
Keiser, Romeo Orpheus	B. Sc.	Bryan.
Kershaw, Samuel Charles	B. Ph.	Columbus.
Martin, Percy	E. E.	Columbus.
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Polk, Walter Charles	C. E.	New Vienna.
Richardson, Hamilton Hutchinson	B. Ag.	Brooklyn.
Robinson, Ekka Mazola	B. Sc.	Columbus.
Schaeffer, George Christian	B. Ph.	Germantown.
Schueller, Erwin Waldemar	B. A.	Columbus.
Slyh, Emma Almieda	B. Sc.	Columbus.
Smith, John William	B. A.	Alpha.
Stinebaugh, Isaac Long	C. E.	Rockaway.
Talbot, Mignon	B. A.	Columbus.
Thompson, James Elmer	B. Sc.	New Carlisle.
Tomlinson, James Rowe	C. E.	Chillicothe.

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Beck, Arthur Andrew	C. E.	Columbus.
Berger, Calvin M.	E. E.	Canton.
Blackford, Robert Stanton	C. E.	Columbus.
Bloom, Edward Martin	B. Sc.	Xenia.
Bone, John Hayes	B. Sc.	McConnellsville.
Claypoole, Charlotte Lake	B. Ph.	Columbus.
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Flynn, Harry Franklin	C. E.	Columbus.
Foster, Rollin Finnie	E. E.	Columbus.
Gale, Cora Cleveland	B. Ph.	Columbus.
Graves, William Lucius	B. A.	Columbus.
Hamilton, Charles Robinson	B. A.	Columbus.
Herlihy, Nellie Marie	B. Ph.	Chillicothe.
Herrick, Louise	B. A.	Columbus.
Hine, James Stewart	B. Ag.	Wauseon.
Hoel, Sarah Elizabeth	B. Sc.	Waynesville.
Hutchinson, Isaac Eberly	B. A.	Columbus.
Innis, Harry	B. A.	Columbus.
Jones, Pearl N.	E. E.	Catawba.
Kennedy, Arthur Holcomb	E. E.	Columbus.
Krauss, Bertha Katharine	B. Ph.	Ottawa.
Levering, Orpheus Dumont	M. E.	Woodview.

McCarter, Edward Bancroft	B. A	Columbus.
Merrill, Alice Louise	B. A	Columbus.
Morrison, Samuel	B. A	Columbus.
Munn, Mortimer Adam	C. E	Bowling Green.
Myers, Roy Vinton	C. E	Louisville.
Nesbitt, John Elmer	B. Sc	Spring Valley.
Palmer, Walter Keifer	M. E	Columbus.
Patterson, Frederick Douglas	B. A	Greenfield.
Peters, Augustus Trimble	E. E	Columbus.
Powell, Charles Spring	E. E	Cincinnati.
Pugh, Lawrence Randolph Whetzel	B. Ph	Columbus.
Ray, William Morrison	C. E	Carrollton.
Robinson, Erdis Geroska	C. E	Columbus.
Scott, Guy	E E	Athens.
Scott, Herbert	B. Sc	Columbus.
Serva, Adam Amos	E. E	New Industry.
Sharp, David Barton	B. A	Millersburgh.
Shepherd, Frank Reed	B. A	Columbus.
Storer, Simon Brewster	E. E	Orangeville.
Stump, Franklin Pierce	B. Ag	Van Wert.
Swickard, Charles Robert	B. A	Columbus.
Taylor, Arthur Wallace	E. E	Clarendon.
Thompson, Carmi A	B. Ph	Ironton.
Turner, Arthur Milton	E. E	Sciotoville.
Williams, Guy Rulon	B. Ph	New Vienna.
Woodborne, Edwin Scott	M. E	Uhrichsville.

FRESHMEN.

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Askew, Frank David	B. Sc	Kansas City, Mo.
Bates, Albert Irwin	B. A	Dayton.
Bell, Mary Edith	B. Ph	Columbus.
Bennett, Sidney Clark	B. Sc	Columbus.
Booth, Ellsworth Leonell	B. Sc	Bellaire.
Brooks, David Walter	E. E	Columbus.
Brown, Newton Henry	E. E	Columbus.
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Burns, Robert Metcalf	B. Sc	Canton.
Butler, George Edward	M. E	Columbus.
Cherington, Arthur Paine	B. A	Clarksburgh.
Cilley, Raymond	B. Sc	Cincinnati.
Claypoole, Bessie Smith	B. Ph	Columbus.
Clum, George Victor	B. A	Columbus.
Cockins, Edith Daisy	B. A	Columbus.
Colton, Walter Raymond	B. A.	Columbus.
Coney, William Hawkes	B. Sc	Honolulu, S. I.
Cope, Frank Askew	C. E.	Columbus.
Corwin, Robert Gates	C. E.	Columbus.
Culbertson, Howard Edward	C. E	West Lafayette.
Cunningham, Edward Walter	C. E	Columbus.
Davis, Charles William	E. E	Youngstown.
Dunham, John Dudley	B. A.	Columbus.
Durfee, Joseph Alba	E. M	Chardon.
Early, John Cline	C. E	Johnsville.

Ellis, Richard Ten Broeck	C. E	Youngstown.
Ernst, Louis Christian	C. E	Ravenna.
Farber, Charles Harker	B. A	Columbus.
Foster, Frank McMillin	E. E	Sharonville.
Foulk, Charles William	B. A	Warren.
Franklin, William Woodbridge	C. E	Chillicothe.
Gehrkens, Edward Frederick	E. E	Kelley's Island.
Gibbs, George Carlton	B. A	Racine.
Green, Jerome Joseph	E. E	Somerset.
Guy, Charles Phellis	B. Ph	Mechanicsburg.
Hagler, Roy	B. Sc	Washington C. H.
Hardy, Chester	B. A	Columbus.
Hassler, Robert Hanitch	E. E	Dayton.
Hayward, George Edward	C. E	Waterford.
Hiatt, William Arthur	B. A	Chester Hill.
Hoster, Carl Jacob	B. Sc	Columbus.
Howard, John Wilmot	B. Sc	Columbus.
Hull, Mary Louise	B. A	Columbus.
Hunt, Wilson Allen	B. Sc	Bloomington.
Jackson, Madison	B. A	Columbus.
Jenkins, Flora	B. Sc	Columbus.
Jenkins, Willis H	C. E	Beloit.
Kellicott, Gertrude Stowell	B. Ph	Columbus.
Kilhefer, Harry Grant	E. E	Medway.
Knauss, William Henry	B. Sc	Columbus.
Krumm, William Herbert	B. Sc	Columbus.
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Murray, Claude R	B. A	Middleport.
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Postle, Kenneth F	B. A	Thornville.
Purdum, William Howard	B. Sc	Chillicothe.
Raymond, Coles Abel	C. E	Wauseon.
Reeves, Frank Herbert	B. Sc	Columbus.
Roney, Nellie	B. Ph	Marysville.
Rutan, Hiram Edgar	B. Ph	Mechanicsburg.
Schick, John Andrew	B. Sc	Bellaire.
Sears, Lorin Beecher	B. Sc	Chillicothe.
Skinner, James Graden Mills	B. A	Portersville.
Smith, Maud Virginia	B. A	Columbus.
Stephenson, Henry Thew	B. Sc	Cincinnati.
Stone, John Chamberlain	B. Ph	Columbus.

Sutherland, Jessie Lee	B. Ph	Pataskala.
Swartzel, Karl Dale	B. Sc	Lewisburg.
Templeton, Harry Edgar	E. E	Piqua.
Voke, Lewis Farwell	B. Sc	Perry.
Weston, Milton	E. E	Kenton.
Whitacre, Marion	B. Sc	Morrow.
Williams, Herbert O	B. A	Columbus.
Zurfluh, William Nicholas	E. E	Toledo.

SPECIAL.

Bonner, Edwin Percy	C. E	London.
Boyd, James Henry	E. M	Lonaconing, Md.
Boynton, Coren Le Roy	E. E	Portsmouth.
Breyfogle, Caroline May	B. A	Columbus.
Bronson, Arthur Parker	E. E	Sandusky.
Clark, Willis Wilson	M. E	Lagonda, Penn.
Crook, Luella Blanche	B. A	Columbus.
Eis, Matthew	E. M	Columbus.
Henderson, William M	B. A	McConnellsville.
Hess, Florence L	B. Ph	Columbus.
Ohikawa, Kakujiro	B. Ph	Ashikaga, Japan.
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Jones, Clarence Miller	M. E	Columbus.
Jones, Smilie	B. Sc	Columbus.
Knopf, Eva S.	B. Ph	Columbus.
Lentz, Theresa Luretta	B. Ph	Columbus.
Liggett, Drusilla Kinkade	B. Ph	Columbus.
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Mullay, Kate Agnes	B. Ph	Columbus.
Okada, Takekuma	B. Ph	Columbus.
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Sessions, Juliette	B. Ph	Columbus.
Sherman, Christopher Elias	C. E	Columbus.
Steward, L. S	C. E	Columbus.
Warner, Samuel Livingston	M. E	Kent.
Whitlock, Horace E	C. E	Piqua.

VETERINARY MEDICINE.

SECOND YEAR.

Daily, Henry Grant		Emerson.
Mawer, George Clifford		Tontogany.
Mendenhall, Maurice Hanson		West Elkton.
Murray, Frank Erskine		Greenfield.
Oberholtzer, Howard C		Wadsworth.

FIRST YEAR.

Early, Franklin Edgar	Johnsville.
Early, Joseph Willard	Johnsville.
Harbage, Arnett	West Jefferson.
Lusk, William Vinton	Gageville.
Ogden, James William	Wooster.
Ruth, Charles Vaughn	Torch.
Smith, Nathaniel Benton	Basil.

PHARMACY.

THIRD YEAR.

Cummins, Henry Rollin	Columbus.
Dye, Clair Albert	McConnellsville.
Easterday, Charles Todd	Shreve.
Grandle, Frank Albert	Lock.
Landacre, Walter	Hilliards.
Spencer, William Henry	Weston.

SECOND YEAR.

Bay, William Fred	Columbus.
Bradford, Ernest	Columbus.
Green, Robert Lee	Somerset.
Heckler, Edward Henry	Cleveland.
Pearce, George Domer	Goshen, Ind.
Stanberry, Charles Longstreth	Deavertown.

FIRST YEAR.

Aylesworth, Ernest	Shreve.
Cline, William Harless	Middleport.
Harris, William Dundass	Berlin Heights.
Jones, Daniel D	Girard.
Lee, Edwin Samuel	Columbus.
Lewis, Thomas Kenyon	West Lafayette.
Mattson, George Hiram	New Holland.
Steineld, Alexander Michael	Columbus.
Tupper, Eugene Larrey	Ottawa.

SHORT COURSE IN AGRICULTURE.

SECOND YEAR.

Demorest, Lawrence William	Columbus.
Hamilton, Robert Morton	Brownsville.
Hiatt, Rollin Daniel	Chester Hill.
Mercer, Worley Deforest	McConnelsville.
Sharp, Robert Hugh	Sugar Grove.

FIRST YEAR.

Beattie, William Renwick	Zanesville.
Brundage, Eugene C	Melmore.

Dunlap, Renwick W	Kingston.
Eysenbach, Ernest	Delphos.
Farnsworth, Delmar J	Waterville.
Florence, George	Circleville.
Frye, Joseph W	Lowell.
Geckler, Charles F	Beebetown.
Holdeman, George Leland	Kingston.
Hood, Sherman	Meander.
Hoyt, Corrydon Albert	Rock Creek.
Pletscher, Roland	Brooklyn.
Powell, Luke	Russell, Ky.
Powell, Ernest	Van Wert.
Riggs, Ernest J	Raccoon Island.
Smith, Samuel J	Cleveland.
Thompson, Ulysses Delbert	Millersville.
Thorne, Bertram	Columbus.
Ward, Benjamin Nelson	DeGraff.

SHORT COURSE IN MINING.

SECOND YEAR.

Carroll, Patrick	Houtzdale, Pa.
Fyfe, John	Houtzdale, Pa.
Gildroy, Richard Edwin	What Cheer, Ia.
Jenkins, Jonathan	Frostburg, Md.
Mors, James	Byerville.
Quinn, John	Houtzdale, Pa.
Rees, David	Cleveland.

FIRST YEAR.

Blower, Joseph Wallett	Bunola, Pa.
Clarke, John Salem	Philipsburgh, Pa.
Evans, Arthur Wiley	Oliver Springs, Tenn.
Furniss, Harry	Murray City.
Hartshorne, George Richard	Philipsburgh, Pa.
Herron, James Scott	Walker's Mills, Pa.
Oakes, Caleb Henry, Jr	Jackson Center.
Slevin, John Patrick	Bradenville, Pa,
Snedden, James	Antrim, Pa.
Tetlow, William Allen	Washingtonville.
Wright, John	Antrim, Pa.

SECOND PREPARATORY.

Appe, George Lescher	Wellsville.
Backhaus, Henry	New Bremen.
Balz, Louis Christian	Columbus.
Barnes, Charles William	Barnesville.
Barrere, George Nelson	Columbus.
Batterson, Winifred G	Columbus.
Beatty, Hobart	Columbus.
Beumler, Charles Gerald	Columbus.
Boger, George Washington	Hamilton.

Bogue, E. E	Orwell.
Brand, Harry Frank	Worthington.
Brandt, Ulysses Sherman	Greencastle.
Cheney, William Taton	Mechanicsburg.
Cooley, Sarah F	Gallipolis.
Cratty, Arthur Hamilton	Columbus.
Dearduff, Carl M	Columbus.
Derby, Florence Harlon	Columbus.
Dunlap, Thaddeus C	Columbus.
Eaton, William Oliver	La Belle.
Finley, Harry M	Hall's Valley.
Flynn, Maud	Columbus.
Francis, Edward	Paddy's Run.
French, Harley Ira	Columbus.
Garber, Edith Zeruah	Columbus.
Gleason, John Quincy Moore	Roscoe.
Graham, Harry	Columbus.
Grant, Milton N	Middleport.
Griffith, Pearle Merrill	Sabina.
Hall, Charles Francis Allen	Columbus.
Hamilton, William Archibald	Columbus.
Haseltine, William Edwards	Columbus.
Hatcher, Harry Haver	Columbus.
Hatcher, Mary Francis	Columbus.
Haywood, Ferdinand Henry	Wapakoneta.
Henderson, Grace Lee	Columbus.
Horix, Karl	Akron.
Howard, Fanny Fern	Columbus.
Huggins, John Buchanan	Mansfield.
Kellenberger, Charles William	Newark.
McAllen, William Johnson	Faunettsburg, Pa.
McCarter, Robert D	Columbus.
Manley, Rush Emmett	Presho, N. Y.
Martin, Edward C	Mechanicsburg.
Meek, Guy Tingley	Columbus.
Millar, John Decker	St. Paul's.
Morris, Ingle Alman	Wapakoneta.
Orcutt, Thaddeus Hollon	London.
Peale, Allen Sanders	Columbus.
Pease, Edward S	Columbus.
Rankin, Hattie Minnie	Columbus.
Robinson, Charles Calvin	Alton.
Rohr, William Smith	Lockbourne.
Short, Florence Ella	Flint.
Simpson, R. D	Columbus.
Stewart, Harford Toland	Columbus.
Strickler, Lillian Belle	Columbus.
Stull, Emmet W	Elkland.
Swartzel, Earl Glen	Lewisburg.
Tate, Ralph B	Cincinnati.
Taylor, John Wilder	Willoughby.
Thompson, Firman	New Carlisle.
Tinney, Gilbert M	Youngstown.
Walker, Edwin Chandler	Mt. Vernon.
Walsh, Joseph James	Columbus.

Weber, Henrietta Charlotte	Columbus.
Weiss, Lawrence Allen	Chatham.
Williamson, Howard P	Wapakoneta.
Wolcott, Roy C	Conover.

FIRST PREPARATORY.

Abbot, Edgar Lawrence	Columbus.
Agler, Eula	Columbus.
Askew, Fred. T	Kansas City, Mo.
Baker, Grace Estelle	Chillicothe.
Barber, William Ritson	Grove City.
Beach, David	Columbus.
Beebe, Stephen Watson	Columbus.
Biebel, Herman M	Columbus.
Brink, May	Columbus.
Broomhall, Willard	Stockport.
Brown, Edwards Cole	Columbus.
Brumley, Daniel Joseph	
Burke, Sherman Emmett	Kennedy.
Camnitz, William J	Columbus.
Campbell, Andrew Owens	Columbus.
Cockell, Percy Brooke	Columbus.
Cockins, William Lewis	Columbus.
Coddington, Edwin F	Conover.
Collins, Curtis	Columbus.
Cromley, Charles E	Ashville.
Cunningham, Le Roy	Mt. Vernon.
De Loffre, Andre	Columbus.
De Loffre, Samuel M	Columbus.
De Vore, Lewis N	West Middleburg.
Driggs, Frank Delmer	Deavertown.
Evans, Ted R	Columbus.
Fitzgerald, Edward O	Big Plain.
Ford, John William	Columbus.
Forney, Henry Hinkle	
Fowler, Harry Rider	Toledo.
Fravel, John H	Columbus.
French, Arthur Neeves	Cincinnati.
Gale, Carl Le Roy	Columbus.
Gerrard, John Baptist	Columbus.
Giesy, Harvey Lee	Columbus.
Grandstaff, Cyrus Walter	Columbus.
Gugle, George L	Columbus.
Hamilton, John Ream	Columbus.
Harrington, Emma	Hilliard.
Harrop, Herbert B	Columbus.
Hastings, Clive	Willoughby.
Helser, Raymond Brandt	Hilliard.
Henderson, Robert William	Columbus.
Henry, Frank R	Washington.
Hodkinson, Samuel M	Steubenville.
Hoffman, George Frederic	Greenup, Kentucky.
Hyde, Hattie Evalyn	Columbus.
Isham, Augustus	Cincinnati.

Jeffrey, Orson Frank	Columbus.
Jones, Alexander Houston	Columbus.
Kerr, Samuel Thompson	Martin's Ferry.
Kœhne, Ira C	Columbus.
Krumm, Raymond	Columbus.
Lamb, Owen Pirl	Commercial Point.
Lloyd, Walter	Columbus.
McConnell, William C	Columbus.
McCord, Frank Edward	Columbus.
McDonald, Andrew	Columbus.
McFarland, Charles	Columbus.
McGregor, James Howard	Bellaire.
McLaughlin, John P	Columbus.
McMillen, Emerson	Columbus.
Marvin, Percy C	Columbus.
Mason, John Sheridan	Groveport.
Mathers, John H	Conover.
Mead, Hattie May	Columbus.
Means, Guy Darrell	Wapakoneta.
Menuez, Edward Barnes	Columbus.
Milligan, William Reed	Deavertown.
Minshall, Addison P	Chillicothe.
Mundheuk, Fred	Columbus.
Needels, Eva Ruckle	Groveport.
Okey, Perry	Columbus.
Oliver, Rebecca Alice	Columbus.
Patch, Homer Austin	Austintown.
Pearl, Allen Sexton	Berlin Heights.
Robb, Milton Bay	Columbus.
Roberts, Martha Kenna	Columbus.
Rogers, Bert	Columbus.
Safford, Robert Edwin	Chillicothe.
Scott, Walter S	Chillicothe.
Sedgwick, Edgar Crayton	Zanesville.
Shane, Charles Frederick	Uhrichsville.
Siebert, Fred. John	Columbus.
Smith, Frances W	Lithopolis.
Smith, Guss	Christiansburg.
Snively, Harry H	Mt. Perry.
Stafford, Esther	Columbus.
Stotlar, Albert	Corning.
Strader, Russell	Shadeville.
Thomas, Edwin	. . . . .
Vorhes, Isaac M	Unionpost.
Wagstaff, Edward A	Niles.
Warner, Henry	Reese's.
Welch, Oliver Bartlett	Uhrichsville.
Wight, J. Bayard	Kinsman.
Wilcox, Harvey Clyde	La Grange.
Williard, George Washington	Columbus.
Williams, Elwood	Columbus.
Williams, Morgan E	Oak Hill.

IRREGULAR PREPARATORY.

Cope, Florence Dean	Columbus.
Davies, John Lodwick	Columbus.
Evans, Frank L.	Circleville.
Harper, Joseph H.	Washington C. H.
Herbert, Robert Gaston	Columbus.
Holmes, James Taylor	New Philadelphia.
Hunt, Mary Cecil	Barnesville.
Malburn, William McDowell	Pueblo, Colo.
Menough, Harry Stewart	Wellsville, Colum. Co.
Neil, Julia Fay	Columbus.
Smith, Henrietta	
Walker, Harry Josiah	Troy.
Willson, Samuel Tully	Columbus.

SUMMARY.

Graduates		7
Undergraduates—		
Seniors	27	
Juniors	29	
Sophomores	52	
Freshmen	89	
Special	33	230
In veterinary medicine	12	
In pharmacy	21	
In short agriculture course	24	
In short mining course	18	75
Preparatory—		
Second year	68	
First year	100	
Irregular	13	181
		493

ROSTER OF THE BATTALION.

Lieutenant Alexander Ogle, 17th U. S. Infantry, Commandant.

Field.

Lieutenant-Colonel	Edward Sigerfoos.
Major	S. C. Kershaw.

Staff.

Adjutant	Capt. E. S. Woodborne.
Quartermaster	Capt. A. T. Peters.
Signal Officer	2d Lt. W. K. Lanman.
Sergeant-Major	D. W. Brooks.
Quartermaster-Sergeant	C. R. Hamilton.

Band.

Leader	2d Lt. F. H. McGuffey.
Drum-Major	Sergeant G. D. Pearce.
Principal Musician	E. W. Cunningham.
Principal Musician	J. Gleason.

"A" Company.

Captain	P. Martin.
First Lieutenant	H. Innis.
Second Lieutenant	J. H Bone.
First Sergeant	C. S. Powell.
Sergeant	F. M. Foster.
Sergeant	A. A. Serva.
Sergeant	J. D. Dunham.
Corporal	H. Graham.
Corporal	H. Beatty.
Corporal	J. H. Coursalt.
Corporal	F. W. Matthias.

"B" Company.

Captain	H. O. Oster.
First Lieutenant	R. F. Foster.
Second Lieutenant	A. M. Turner.
First Sergeant	J. J. Green.
Sergeant	W. H. Coney.
Sergeant	W. E. Hazeltine.
Sergeant	G. S. Marshall.
Corporal	M. Weston.
Corporal	S. B. Storer.
Corporal	F. D. Patterson.

"C" Company.

Captain	E. B. McCarter.
First Lieutenant	W. K. Palmer.
Second Lieutenant	E. Evans.
First Sergeant	C. H. Farber.
Sergeant	L. R. N. Pugh.
Sergeant	W. A. Hamilton.
Sergeant	W. H. Knauss.
Corporal	T. C. Dunlap.
Corporal	A. W. Taylor.
Corporal	M. A. Munn.

"D" Company.

Captain	W. L. Evans.
First Lieutenant	R. V. Myers.
Second Lieutenant	J. W. Howard.
First Sergeant	R. T. Ellis.
Sergeant	R. M. Lee.
Sergeant	A. P. Cherrington.

Sergeant ..... R. L. Green.
Corporal ..... H. H. Hatcher.
Corporal ..... E. G. Robinson.
Corporal ..... J. T. Holmes.
Corporal ..... W. L. McAllen.

Artillery.

Second lieutenant ..... W. H. Spencer.
First sergeant ..... W. M. Ray.
Sergeant ..... J. B. Huggins.
Corporal ..... F. S. Miller.
Corporal ..... R. S. Blackford.
Corporal ..... C. M. Berger.

FOUNDATION AND HISTORY OF THE UNIVERSITY.

ACT OF INCORPORATION AND UNREPEALED ACTS OF THE GENERAL ASSEMBLY OF OHIO.

On the second of July, 1862, the congress of the United States passed the following act donating lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts:

AN ACT

Donating lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there be granted to the several states for the purposes hereinafter mentioned, an amount of public land to be apportioned to each state a quantity equal to thirty thousand acres for each senator and representative in congress, to which the states are respectively entitled by the apportionment under the census of eighteen hundred and sixty; *provided*, that no mineral lands shall be selected or purchased under the provisions of this act.

SEC. 2. That the land aforesaid, after being surveyed, shall be apportioned to the several states in sections or subdivisions of sections not less than one quarter of a section, and whenever there are public lands in a state subject to sale at private entry at one dollar and twenty-five cents per acre, the quantity to which said state shall be entitled shall be selected from such land within the limits of such state, and the secretary of the interior is hereby directed to issue to each of the states in which there is not the quantity of public lands subject to sale at private entry at one dollar and twenty-five cents per acre, to which said state may be entitled, under the provisions of this act, land scrip to the amount in acres for the deficiency of its distributive share, said scrip to be sold by said states, and the proceeds thereof applied to the uses and purposes prescribed in this act, and for no other use or purpose whatsoever; *provided*, that in no case shall any state to which land scrip may be thus issued, be allowed to locate the same within the limit

of any other state or of any territory of the United States; but their assignees may thus locate said land scrip upon any of the unappropriated lands of the United States subject to sale at private entry, at one dollar and twenty-five cents per acre; and *provided further*, that not more than one million acres shall be located by such assignees in any one of the states; and *provided further*, that no such location shall be made before one year from the passage of this act.

SEC. 3. That all the expenses of management, superintendence and taxes, from date of selection of said lands, previous to their sales, and all expenses incurred in the management and disbursement of the moneys which may be received therefrom, shall be paid by the states to which they may belong out of the treasury of said states, so that the entire proceeds of the sale of said lands shall be applied without any diminution whatever to the purpose hereinafter mentioned.

SEC. 4. That all moneys derived from the sale of the lands aforesaid by the state to which the lands are apportioned and from the sales of the land scrip hereinbefore provided for shall be invested in stocks of the United States, or some other safe stocks, yielding not less than five per centum upon the par value of said stocks, and that the moneys so invested shall constitute a perpetual fund; the capital of which shall remain forever undiminished (except so far as may be provided in section fifth of this act), and the interest of which shall be inviolably appropriated by each state which may take and claim the benefit of this act to the endowment, support and maintenance of at least one college, where the leading objects shall be without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such a manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.

SEC. 5. That the grant of land and land scrip hereby authorized, shall be made on the following conditions, to which as well as to the provisions hereinbefore contained, the previous assent of the several states shall be signified by legislative act:

1st. If any portion of the fund invested, as provided by the foregoing section, or any portion of the interest thereon, shall by any action or contingency, be diminished or lost, it shall be replaced by the state to which it belongs, so that the capital of the fund shall remain forever undiminished, and the annual interest shall be regularly applied without diminution to the purposes mentioned in the fourth section of this act, except that a sum not exceeding ten per centum upon the amount received by any state under the provisions of this act may be expended for the purchase of lands for sites or experimental farms whenever authorized by the respective legislatures of said states.

2d. No portion of said fund, nor the interest thereon, shall be applied directly or indirectly under any pretense whatever, to the purchase, erection, preservation, or repair of any building or buildings.

3d. Any state which may take and claim the benefit of the provisions of this act, shall provide within five years at least not less than one college as described in the fourth section of this act, or the grant to such state shall cease, and said state shall be bound to pay the United States the amount received of any lands previously sold, and that the title to purchase under the same shall be valid.

4th. An annual report shall be made, regarding the progress of each college, recording any improvements and experiments made, with their costs and results, and such other matters including state industrial and economical statistics as may be supposed useful; one copy of which shall be transmitted by mail free, by each, to all other colleges which may be endowed under the provisions of this act, and also one copy to the secretary of the interior.

5th. When lands shall be selected from those which have been raised to double the minimum price, in consequence of railroad grants, they shall be computed to the states at the maximum price, and the number of acres proportionally diminished.

6th. No state while in condition of rebellion or insurrection against the government of the United States, shall be entitled to the benefits of this act.

7th. No state shall be entitled to the benefits of this act, unless it shall express its acceptance thereof by the legislature within two years from the date of its approval by the President.

SEC. 6. That land scrip issued under the provisions of this act, shall not be subject to location until after the first day of January, one thousand eight hundred and sixty-three.

SEC. 7. That the land officers shall receive the same fees, for locating land scrip issued under the provisions of this act, as are now allowed for the location of military bounty land warrants, under existing laws; *provided*, their maximum compensation shall not be thereby increased.

SEC. 8. That the governors of the several states to which scrip shall be issued under this act, shall be required to report annually to congress all sales made of such scrip until the whole shall be disposed of, the amount received for the same, and what appropriation has been made of the proceeds.

On February 9, 1864, the general assembly of the state of Ohio passed an act to accept the grant conveyed in the act recited above, and January, 1865, Governor John Brough announced that certificates of scrip for 630,000 acres of land had been received and placed in the state treasury. The next step was the passage of an act to provide for the sale of the land scrip.

In a report to the governor, dated December 30, 1865, the commissioners, appointed under this act, announced the sale of scrip for 11,360 acres, and declared their opinion that, unless greater powers should be conferred upon them, the scrip of Ohio would not be sold in less than ten years, as other states were selling similar scrip below the minimum price of eighty cents per acre to which they were confined. In accordance with this suggestion and these facts, the legislature passed an act April 5th, 1866, to amend the act aforesaid, so as to remove the restriction of a minimum price.

On the tenth of December in the same year the commissioners reported to the legislature the sale of all the scrip, the great bulk of it being sold at fifty-three cents per acre. The total proceeds of the sales were $342,-450 80. This sum was paid into the state treasury during 1866 and 1867, and interest on it was computed from the date of payment at six per cent.

This fund is the financial basis of the university. It has been augmented by the additions of interest, simple and compound, and by the sale of Virginia military lands, so that it now amounts to $543,752.64. Its security is established by its being made a part of the irreducible debt of the state. The rate of interest which it bears is six per cent.

After the selling of the land scrip, the location and plan of organization of the future college received the attention of successive legislatures.

On the seventh of March, 1868, a joint resolution was passed by the general assembly appointing a joint committee from the senate and the house of representatives, with authority to receive propositions for the location of the college, and to report the same to the legislature.

The committee, at the ensuing session, reported propositions for location from Worthington, Wooster, Oxford, Urbana, London, and Newark, with liberal offers of donations of land and money from each of the competing towns. Majority and minority reports were brought in, the former recommending the acceptance of the proposition of Urbana, and the latter of Wooster; but neither report secured favorable action in the legislature.

The following act constitutes the initial date of the college:

AN ACT

To establish and maintain an agricultural and mechanical college in Ohio.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That a college to be styled the Ohio Agricultural and Mechanical College, is hereby established in this state, in accordance with the provisions of an act of congress of the United States, passed July 2, 1862, entitled "an act donating public lands to the several states and territories which may provide colleges for the benefit of agricultural and mechanic arts," and said college to be located and controlled as hereinafter provided. The leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agricultural and mechanic arts.

SEC. 2. The government of said college shall be vested in a board of trustees, to consist of one from each congressional district of this state, who shall be appointed by the governor, by and with the advice and consent of the senate. The president of the state board of agriculture shall be ex-officio member of said board. [*Repealed April* 16, 1874.]

SEC. 3. The members of the board of trustees, and their successors, shall hold their office for the term of six years each; provided, that at the first regular meeting of said board, the said members shall determine by lot, so that as nearly as may be one-third shall hold their office for two years, one-third for four years, and one-third for six years from the date of the first meeting of the board, or until their successors are appointed and qualified. In case a vacancy occurs by death, resignation or otherwise, the appointment shall be for the unexpired term. The trustees shall receive no compensation for their services, but shall be entitled to reasonable and necessary expenses while in the discharge of their official duties. [*Repealed April* 16, 1874.]

SEC. 4. The trustees and their successors in office shall be styled the "Board of trustees of the Ohio Agricultural and Mechanical College," with the right as such of suing and being sued, of contracting and being contracted with, of making and using a common seal, and altering the same at pleasure.

SEC. 5. The board of trustees shall have power to adopt by-laws, rules, and regulations for the government of said college; to elect a president; to determine the number of professors and tutors, elect the same, and fix their salaries. They shall also have power to remove the president or any professor or tutor whenever the interests of the college, in their judgment, shall require; to fix and regulate the course of instruction, and to prescribe the extent and character of experiments to be made.

SEC. 6. The board of trustees shall annually appoint an executive committee of

not less than three of their own members, who, when said board is not in session, shall have the management and control of the affairs of said college, under the direction of the board, and shall furnish a full report of their proceedings at every regular meeting of the board, and at such other times as the board may direct. [*Repealed April* 16, 1874.]

SEC. 7. The college shall be open to all persons over fourteen years of age, subject to such rules and regulations and limitations, as to members from the several counties of the state, as may be prescribed by the board of trustees; provided that each county shall be entitled to its just proportion, according to its population. The board may provide for courses of lectures, either at the seat of the college or elsewhere in the state, which shall be free to all.

SEC. 8. The board of trustee, shall have the general supervision of all lands, buildings, and other property belonging to said college, and the control of all expenses therefor; provided always that said board shall not contract any debt not previously authorized by the general assembly of the state of Ohio.

SEC. 9. The board of trusteess shall, annually, elect one of their number chairman, and in the absence of the chairman shall elect one of their number temporary chairman, and shall have power to appoint a secretary, treasurer and librarian, and such other officers as the interests of the college may require, who may or may not be members of the board, and shall hold their offices for such term as said board shall fix, subject to removal by said board, and shall receive such compensation as the board shall prescribe. The treasurer shall, before entering upon the duties of his office, give bond to the state of Ohio in such sum as the board may determine, which bond shall not be for a less sum than the probable amount that will be under his control in any one year, conditioned for the faithful discharge of his duties and the payment of all moneys coming into his hands, said bond to be approved by the attorney general of the state.

SEC. 10. The board of trustees shall have power to secure a collection of specimens in mineralogy, geology, zoölogy, botany, and other specimens pertaining to natural history and the sciences; and it shall be the duty of the chief geologist of the state to collect and deposit in such place as the trustees may direct, a full and complete set of specimens as collected by him or his assistants, for the benefit of said college. The board shall make provision for a library, apparatus, and arms and accoutrements, and for increasing and preserving the same. [*Repealed April* 20, 1877.]

SEC. 11. The board of trustees shall have power to receive and hold in trust, for,the use and benefit of the college, any grant or devise of land, and any donation or bequest of money or other personal property, to be applied to the general or special use of the college; all donations or bequests of money shall be paid to the state treasurer, and invested in the same manner as the endowment fund of the college, unless otherwise directed in the donation or bequest.

SEC. 12. The first meeting of the members of the board shall be called by the governor as soon after the appointment of said board as he may deem advisable, to be held at Columbus, Ohio; all succeeding meetings shall be called in such manner as said board may prescribe; said board shall meet at least once annually at the college building. A majority of the board of trustees shall constitute a quorum to do business; provided, it shall require a majority of all the board to elect or remove a president or professor. [*Repealed April* 20, 1877.]

SEC. 13. The title for all lands for the use of said college, shall be made in fee simple to the state of Ohio, with covenants of seizin and warranty, and no title shall be taken to the state for purposes aforesaid until the attorney general shall be satisfied that the same is free from all defects and incumbrances.

SEC. 14. The board of trustees shall cause a report to be made annually to the governor, of the condition of said college; the amount of receipts and disbursements, and for what the disbursements were made; the number of professors, teachers, and other officers, and the position and compensation of each; the number of students in the several departments and classes, and the course of instruction pursued in each; also, an

estimate of the expenses of the ensuing year; a full transcript of the journal of the proceedings of the board for the past year, the progress of said college, recording any improvements and experiments made, with their cost, and the results, and such other matters as may be supposed useful; one copy, when printed and bound, shall be transmitted by mail, free, to all other colleges which may be endowed under the provisions of said act of congress, and also one copy to the secretary of the interior. [*Repealed April* 20, 1877.]

SEC. 15. The attorney-general of the state shall be the legal adviser of said board of trustees, and he shall institute and prosecute all suits in behalf of the same, and shall receive the same compensation therefor as he is entitled to by law for suits brought in behalf of the asylums of the state.

SEC. 16. All funds, together with the interest now accumulated thereon, derived from the sale of land scrip issued to the state of Ohio by the United States in pursuance of the act of congress aforesaid, shall be invested in registered bonds of the state of Ohio, or of the United States, by the authority now having control of the same; which bonds shall be and remain in the custody of the state treasurer intact, unless one-tenth shall be appropriated by the general assembly for the purchase of land, as provided in the act of congress, who shall pay over the income thereof as it may accrue to the treasurer of said college upon the order of the auditor of state, made upon the requisition of the board of trustees; to be by the board of trustees appropriated to the endowment, support and maintenance of the college, as provided in the act of congress as aforesaid. [*Repealed April* 20, 1877.]

SEC. 17. It shall be the duty of the board of trustees to permanently locate said agricultural and mechanical college upon lands, not less than one hundred acres, which, in their judgment is best suited to the wants and purposes of said institution, the same being reasonably central in the state, and accessible by railroad from different parts thereof, having regard to healthiness of location, and also regarding the best interests of the college in the receipt of moneys, lands or other property donated to said college by any county, town or individual, in consideration of the location of said college at a given place; provided, it shall require a three-fifths vote of the trustees to make said location; and provided, further, that said location shall be made on or before the fifteenth day of October, 1870; provided, further, that any person acting as a trustee, who shall accept or receive, directly or indirectly, any sum or amount from any person or persons, to use their influence in favor of the location of said college at any particular point or place, shall be held to be guilty of a misdemeanor, and on conviction thereof by any court of competent jurisdiction, shall be fined in any sum not less than one thousand nor more than ten thousand dollars; provided, further,that in the location of said college the said, trustees shall not, in any event, incur any debt or obligation exceeding forty thousand dollars; and if, in their opinion, the interests of the college can not be best promoted without a larger expenditure for the location than that sum, then they may delay the permanent location of the same until the third Monday of January, 1871, and report their proceedings and conclusions to the general assembly; provided, further, that said college shall not be located until there are secured thereto for such location, donations in money or unincumbered lands at their cash valuation, whereon the college is to be located, or in both money and such lands, a sum equal to at least one hundred thousand dollars.

SEC. 18. This act shall take effect and be in force from and after its passage.

Passed March 22, 1870. [67 v. 20.]

Under this act a board of nineteen trustees was appointed by Governor R. B. Hayes, and confirmed by the senate. The following gentlemen composed the board, arranged in the order of their congressional districts:

First district, Aaron F. Perry; 2d district, Joseph F. Wright; 3d district, Richard C. Anderson; 4th district, William B. McClung; 5th district, William Sawyer; 6th district, James M. Trimble; 7th district, Joseph Sullivant; 8th district, Thomas C. Jones; 9th district, Warren P. Noble; 10th district, James W. Ross; 11th district, Ralph Leete; 12th district, Daniel Keller; 13th district, Marvin M. Munson; 14th district, Norton S. Townshend; 15th district, Valentine B. Horton; 16th district, John C. Jamison; 17th district, Cornelius Aultman; 18th district, John R. Buchtel; 19th district, Henry B. Perkins.

The board held its first meeting in Columbus on May 11, 1870, and effected a permanent organization by the election of Valentine B. Horton, president; R. C. Anderson, secretary; and Joseph Sullivant, treasurer.

The counties of Champaign, Clark, Franklin and Montgomery competed for the location. Champaign county offered $200,000, in 8 per cent. county bonds; Clark offered the same amount; Franklin offered $300,000, in 7 per cent. bonds, and Montgomery offered, by pledges of several of her prominent citizens, $400,000, in 8 per cent. bonds. After prolonged and thorough discussion, the proposition of Franklin county was accepted, and on October 13, 1870, the college was located within the limits of the city of Columbus, on a farm of about 317 acres of excellent land. This amount has since been increased to about 330 acres. The donation from Franklin county was increased by contributions from citizens of Columbus, and by two of the railroads entering here, to the amount of about $28,000. The railroad companies contributing were the Cleveland, Columbus and Indianapolis Railroad, and the Pittsburg, Cincinnati and St. Louis Railroad.

A site for a college building was selected, and architects were invited to furnish plans for such building. The plan prepared and offered by Mr. Jacob Snyder, of Akron, was adopted.

The plan of study to be pursued in the college was made the subject of very earnest discussion in the board of trustees from the date of its organization. Quite divergent views were at first held by different members, but on January 6th, 1871, they united in adopting the general plan presented and advocated by Joseph Sullivant, Esq., of Columbus. This plan had for its aim the establishment of a scientific school of a liberal character. The following departments were included in it:

1. Agriculture. 2. Mechanic Arts. 3. Mathematics and Physics. 4. Chemistry. 5. Geology, Mining and Metallurgy. 6. Zoology and Veterinary Science. 7. Botany and Horticulture. 8. English Language and Literature. 9. Modern and Ancient Languages. 10. Political Economy and Civil Polity.

It was not designed that these subjects should necessarily stand in the same connections in which they are here placed, but only that the general range of instruction thus indicated should be offered by the college. To Mr. Sullivant was assigned the equipment of laboratories and

cabinets, a fund of $25,000 being set aside for this general purpose, including the necessary furniture of the building.

The following named gentlemen were elected professors at a meeting of the trustees held on January 2d, 1873:

Thomas C. Mendenhall, of Columbus, Professor of Physics and Mechanics; Sidney A. Norton, of Cincinnati, Professor of General and Applied Chemistry; Edward Orton, of Yellow Springs, Professor of Geology, Mining and Metallurgy; Joseph Millikin, of Hamilton, Professor of English and Modern Languages; W. G. Williams, of Delaware, Professor of Latin and Greek Languages.

At the same meeting of the trustees, but at a somewhat later date, Norton S. Townshend, of Avon, was elected Professor of Agriculture, he having previously resigned his position on the Board of Trustees to accept it.

Professors Mendenhall, Norton, Millikin and Townshend accepted their appointments. Professor Williams also signified his acceptance, but was subsequently released at the request of the trustees of the Ohio Wesleyan University, with which he was at the time connected. Professor Orton declined the professorship of geology, but in April succeeding the presidency of the institution was offered to him, which he accepted in May. The professorship of geology was also assigned to him.

During the summer of 1873, Professor R. W. McFarland of Oxford, was called to the professorship of mathematics, and the subject of civil engineering was also assigned to his department.

Mr. John H. Wright, a recent graduate of Dartmouth College, was appointed assistant professor in the department of languages, and to him were assigned all of the classes in Latin and Greek.

The college was opened for the reception of students on September 17, 1873.

A reorganization of the board of trustees was effected by the passage April 20, 1874, of an act to amend the act entitled "An act to establish and maintain an Agricultural and Mechanical College in Ohio," passed March 22, 1870.

Under this act, the following named gentlemen were appointed by Governor William Allen and confirmed by the senate:

Ralph Leete, Lawrence county; Alexander Waddle, Clark county; Warren P. Noble, Seneca county; William Larwill, Crawford county; Joseph Sullivant, Franklin county.

A second reorganization of the board of trustees was effected April 20th, 1877, by the passage of an act "To regulate the Ohio Agricultural and Mechanical College in Ohio, and to repeal certain acts therein named."

By this act the board of trustees was increased from five to twenty, so as to include one member from each congressional district of the state, and the following members were appointed by Governor Thomas L. Young:

First district, Alfred Gaither; 2d district, C. Kinsinger; 3d district, Cyrus Falconer; 4th district, R. P. Finley; 5th district, J. P Schmeider; 6th district, W. H. Scott; 7th district, Herman Hoover; 8th district, A. C. Deuel; 9th district, T. C. Jones; 10th district, W. P. Noble; 11th district, Ralph Leete; 12th district, J. Sullivant; 13th district, D. W. Caldwell; 14th district, Thomas Mickey; 15th district, A. W. Glazier; 16th district, J. C. Jamison; 17th district, A. B. Cornell; 18th district, C. W. Horr; 19th district, E. F. Ensign; 20th district, W. S. Streator.

At the same session of the legislature there was passed an act "to establish a school of mines and mine engineering in the Ohio Agricultural and Mechanical College."

In May, 1878, a third reorganization of the board of trustees was effected and the name of the institution was also changed by the passage of the following act:

AN ACT

To reorganize and change the name of the Ohio Agricultural and Mechanical College, and to repeal certain acts therein named.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the educational institution heretofore designated as the Ohio agricultural and mechanical college shall be known and designated hereafter as "The Ohio State University."

SEC. 2. The government of said university shall be vested in a board of seven trustees, who shall be appointed by the governor of the state, with the advice and consent of the senate; but no trustee, or his relation by blood or marriage, shall be eligible to any professorship or position in the university, the compensation for which is payable out of the state treasury, or said college fund.

SEC. 3. The members of said board of trustees, and their successors, shall hold their offices for the term of seven years each; provided, that the trustees first appointed under the provisions of this act shall hold their terms for one, two, three, four, five, six, and seven years, respectively, to be fixed by the governor in their commissions. In case a vacancy shall occur from death or other cause, the appointment shall be for the unexpired term. The trustees shall not receive any compensation for their services, but they shall be paid their reasonable and necessary expenses while engaged in the discharge of their official duties.

SEC. 4. The board of trustees shall have power, and it is made their duty to collect, or cause to be collected, specimens of the various cereals, fruits, and other vegetable products, and to have experiments made in their reproduction upon the lands of the university, and to make report of the same, from year to year, together with such other facts as may tend to advance the interests of agriculture.

SEC. 5. The board of trustees shall have power, and it is hereby made their duty, to secure and keep in the said university, a collection of specimens in mineralogy, geology, zoölogy, botany, and other specimens pertaining to natural history and the sciences; and it shall be the duty of the president of the university to collect and deposit in the said university in such manner as shall be directed by the trustees, a full and complete set of specimens as collected by him and his assistants, together with a brief description of the character of the same, and where obtained; and the said specimens shall be properly classified and kept for the benefit of said university.

SEC. 6. The first meeting of the members of the board shall be called by the governor, as soon after the appointment of said board as convenient, to be held at said university, in Columbus, Ohio. All succeeding meetings shall be called in such a manner, and at such times as the board may prescribe. The said board shall meet at least three times annually, and at such other times as they may think necessary for the best interest of the said university. A majority of the board of trustees present at any meeting shall constitute a quorum to do business; provided, a majority of all the board shall be required to elect or remove a president or professor.

SEC. 7. The board of trustees shall cause to be made, on or before the first day of January of each year, a report to the governor of the condition of said university; the amount of receipts and disbursements, and for what the disbursements were made; the number of professors, officers, teachers, and other employes, and the position and compensation of each; the number of students in the several departments and classes, and the course of instruction pursued in each; also, an estimate of the expenses for the ensuing year; a statement showing the progress of said university, recording any improvements and experiments made, with their costs, and the results, and such other matters as may be supposed useful. There shall be printed, under the provisions of section seven (7) of the act passed March 30, 1875 (O. L., volume 72, page 179), in pamphlet form, one thousand copies of said report for the general assembly, one thousand for the president and faculty of said college, and three thousand copies for distribution by the trustees in their several districts, in such manner as they shall deem best for the interests of said university. The president of said university shall transmit by mail one copy to the secretary of the interior, and one copy to each of the colleges which are or may be endowed under the provisions of the act of congress of July 2, 1862.

SEC. 8. All funds derived from the sale of land scrip issued to the state of Ohio by the United States, in pursuance of the aforesaid act of congress, together with the interest accumulated thereon, shall constitute a part of the irreducible debt of the state, the interest upon which, as provided by the act of February 10, 1870 (O. L., volume 67, page 15), shall be paid to the university by the auditor of state, upon the requisition of the commissioners of the sinking fund, issued on the certificate of the secretary of the board of trustees, that the same has been appropriated by said trustees to the endowment, support and maintenance of the university, as provided in the act of congress aforesaid.

SEC. 9. That said board of trustees shall fix the compensation for the faculty, teachers, and all other employes of the university; provided, that the compensation for the services of the president of said university shall not exceed three thousand dollars, and that of the professors twenty-five hundred dollars per annum.

SEC. 10. It shall be the duty of the board of trustees, in connection with the faculty of the university, to provide for the teaching of such branches of learning as are related to agriculture and the mechanic arts, mines and mine engineering, and military tactics, and such other scientific and classic studies as the resources of the fund will permit; but no student will be required to study military tactics or take part in military drill, or provide any military or particular uniform, except those who elect to study military tactics.

SEC. 11. That the act passed April 20, 1877 (O. L., volume 74, page 100), entitled "an act to regulate the Ohio agricultural and mechanical college in Ohio, and to repeal certain acts therein named," and all parts of acts repealed by said act, are hereby repealed.

SEC. 12. This act shall take effect and be in force from and after its passage.

Passed May 1, 1878. [75 v. 126.]

Under this act Governor R. M. Bishop appointed the ollowing Board of Trustees:

Hon. James B. Jamison, Cadiz, Harrison county, for one year; S. H. Ellis, Springboro, Warren county, for two years; Hon. Stephen Johnston, Piqua, Miami county, for three years; Hon. T. J. Godfrey, Celina, Mercer county, for four years; Alston Ellis, Hamilton, Butler county, for five years; T. Ewing Miller, Columbus, Franklin county, for six years; Hon. J. H. Anderson, Columbus, Franklin county, for seven years.

EQUIPMENT LAND.

The university domain includes three hundred and thirty acres of land, lying between High street and the Olentangy river. The buildings, campus and athletic grounds occupy about eighty acres, and the rest is devoted to agricultural purposes, the greater part of it being under the management of the agricultural experiment station. The campus is a beautiful tract and is being improved year by year. It affords ample space for military drill, and for engineering field work.

The university is situated within the corporate limits of the city of Columbus, two miles north of the Union depot. Two lines of street railroad reach the grounds. The white cars pass along the east or High street line and the green cars extend to the south line near the dormitories. Persons wishing to reach the university or the residences of professors should take a white car going northward from the depot. Those wishing to visit the experiment station or the dormitories will find the green cars more convenient.

BUILDINGS.

There are five buildings devoted to the immediate work of the university.

University Hall was erected in 1872–73 and was for some years the only building devoted to instruction. It is built of brick with Berea stone trimmings. Its length is two hundred and thirty-five feet and its depth in central portion one hundred and nine feet, the depth of the wings being fifty-eight feet. It is three stories in heighth, besides the basement and mansard story, both of which are wholly occupied. The contract cost was $112,484 00. This building contains the president's office, the chapel, the geological museum, the rooms for free-hand and industrial drawing, the library, class rooms, the physical and physiological laboratories, three halls for the literary societies and the office of the state meteorological bureau.

The Mechanical Laboratory was built in 1878. The material is brick, and the dimensions seventy-seven feet front and thirty-two feet depth, with a wing sixty-one feet in length and thirty-two feet in depth.

It contains a room for wood-work, a forge room, a foundry, a machine room, a room fitted up with cases for the care of models, instruments of precision, etc., and a room for instruction in theoretical mechanics and draughting. The cost of the building and its original equipment was about ten thousand dollars; but repeated and valuable additions have since been made to the outfit.

The Botanical Building was provided for in 1883 by a state appropriation of fifteen thousand dollars. It is constructed of brick and is fifty feet long by forty feet wide, with an attachment in the rear which is twenty-five feet square. The whole is two stories in height. The main room on the first floor is the lecture room and laboratory of the department of botany and horticulture. On the second floor is the museum of the department. There are also an office, a seed room, a store room, a private laboratory, etc. Connected with this building is a green-house containing two compartments, each of which is twenty-five feet wide, one being thirty and the other forty feet in length. A plain but serviceable propagating house stands near, in which large numbers of plants are reared for the lawn and for the purpose of instruction.

The Electrical Laboratory was erected in 1889. It is a two-story brick building, about seventy-five feet long and forty-five feet wide. Sixty feet of the first story forms the engine and dynamo room. The floor of this room is of asphalt, laid on a solid concrete foundation. The remainder of the space is occupied by a stairway, an office and a

washroom. On the second floor are a lecture room, thirty by forty feet, a photometric room, a library room, and three measurement rooms. The building and its outfit are valued at about sixteen thousand dollars, of which ten thousand were appropriated by the general assembly, and the remainder was donated by various electric companies.

The Chemical Building was completed during the summer of 1890, and is now occupied by the departments of general chemistry, agricultural chemistry, mining and metallurgy, and pharmacy. The building and contents have cost about sixty-two thousand dollars, which was appropriated by the state. It stands three hundred and twenty-five feet east of university hall, and, like that, fronts the south. It is two stories in height, with a basement of about eleven feet. Its greatest length is one hundred and seventy-nine feet, and its depth between the extreme points, one hundred and thirty-two feet. The depth of the main portion, exclusive of the wings, varies from sixty-three to more than seventy feet. It is built of pressed brick laid in red mortar. At the entrance is a large loggia, and beyond this a vestibule opening into the main hall.

The department of General Chemistry occupies the middle and western portions of the second floor. The main lecture room is thirty-seven by forty-two feet, and contains seating capacity for one hundred and fifty persons. The qualitative laboratory is about forty by fifty-eight feet, and contains desks for forty students. The quantitative laboratory contains desks for eighteen students. Besides these, there is a second lecture room accommodating forty persons, a room for the preparation of experiments, a balcony accessible both from the lecture room and the preparation room, two store rooms for supplies, a balance room, a room for working with foul gases, one for distilling water, one for spectroscopic work, one for rough work, one for books, a private laboratory, and an office.

The department of Agricultural Chemistry occupies the middle portion of the first story and the basement, and has a lecture room with seats for sixty students, a preparation room, a laboratory with desks for fifty-four students, a laboratory for organic analysis, a store room, a balance room, and a private laboratory.

The department of Mining and Metallurgy occupies the eastern part of the building. In the basement are the smelting furnaces, the assay laboratory, a room for rough work, and store rooms for supplies. On the first floor is the lecture room of the professor in charge, twenty-five by twenty-six feet, and having a seating capacity of forty, a laboratory with desks for sixteen students, a store room, a balance room, a private laboratory and an office. On the second floor is the lecture room of the assistant professor, a draughting room, a room for instruments, and an office.

The department of Pharmacy is assigned to the first floor and basement in the western end of the building, and has a lecture room twenty-two feet by thirty-six, providing for sixty students, a preparation room, a laboratory with desks for twenty-five students, a room for supplies, a balance room, a model drug-store, and a private laboratory.

The Veterinary Building, recently completed, contains, on the first floor a veterinary museum and library, a dispensary, and two private rooms for the persons in charge. On the second floor will be a class-room, a bacteriological laboratory and a microscopical laboratory. The rear extension contains an operating hall thirty by thirty-three feet in size, and a room provided with stalls, cages, etc., for the care of animals under treatment. Over this room is the hay-loft.

The North Dormitory is situated at the northern limit of Neil avenue, and fronts Eleventh avenue. It is the terminus of the Neil avenue street railroad. It is a plain structure of brick, and affords accommodations for sixty-four students.

The South Dormitory stands near Neil avenue within a few rods of the north dormitory. It is also built of brick, and contains rooms for twenty students.

The Ohio Agricultural Experiment Station occupies several buildings on the land of the university, two of which have been erected from funds appropriated directly to the station. The building containing the offices, library and laboratories is a handsome

brick fronting the campus from the west. An extensive green-house is attached. A frame building is used as a store room for seeds and implements. There is also a frame residence, a barn for horses, and another for the dairy, and several small buildings.

Residences. There are four brick and two frame residences. One of these is occupied by the president of the university, one by the professor of agriculture, another by the professor of physics, a fourth by the professor of history and political science, another is used as a chapter house by one of the fraternities, and the sixth is let to a tenant who is not connected with the university.

THE UNIVERSITY LIBRARY.

The library contains about ten thousand volumes, exclusive of pamphlets and unbound periodicals. It is of recent formation, and being designed especially for the use of the officers and students of the university, in all purchases of books the most urgent needs of the several departments have been kept constantly in view. The collection, therefore, includes very little that is obsolete, curious or merely entertaining. Many of the best periodicals, scientific and literary, American and foreign, are taken; most of these are regularly bound, and of a considerable number the library already possesses complete series. Annual additions are made to the various departments represented in the collection.

During the current year nearly four thousand dollars will be expended for books and periodicals. The library has a double card catalogue—of authors and of subjects—and is kept in a pleasant, well-lighted room. The library hours are from 9 A. M. to 1 P. M., and from 2 P. M. to 5 P. M. every week day of term time except Saturday. The library is a circulating one for both officers and students.

In the reading room all students have free access to a collection of cyclopædias, dictionaries and works of reference in the various departments of study; graduate and senior undergraduate students are usually admitted to the alcoves. The management of the library is vested in a body known as the Library Council, which consists of six members, as follows: The president of the university and the librarian, *ex officiis* and four professors elected by the faculty for a term of two years each.

The State Library containing about sixty thousand volumes is accessible to students, and forms a valuable auxiliary to the university. The public library of Columbus may also be used by students of the university.

Departments of the University.

AGRICULTURE.

COURSES OF INSTRUCTION.

(1.) AGRICULTURE—Lectures on soils, their origin, character, etc. Modes of cultivation. Machinery, buildings, etc.

First Term.—Three times a week. Emerson and Flint's "Manual of Agriculture."

Second Term.—Three times a week. Johnson's "How Crops Grow."

Third Term.—Four times a week. Allen's "Book of the Farm."

PROFESSOR TOWNSHEND.

(2.) DOMESTIC ANIMALS. Lectures and recitations.

First Term.—Four times a week. Curtis's "Horses, Cattle and Sheep."

Second Term.—Four times a week. Stewart or Armsby on "Feeding."

Third Term.—Four times a week. Miles' "Stock Breeding."

PROFESSOR TOWNSHEND.

(3.) PATHOLOGY AND THERAPEUTICS. Lectures and recitations.

First Term.—Three times a week. Stone's "Elements of Medicine." Diseases of animals, their causes, prevention and cure.

Second Term.—Three times a week. Bruce's "Materia Medica." A study of remedial agents.

Third Term. Three times a week. Special pathology. Laws' "The Farmer's Veterinary Adviser."

PROFESSOR TOWNSHEND.

These courses are all taken by students in the Freshman year of the full course in Agriculture, and by students in the second year of the short course. Course (3) and the first and third terms of course (2) are taken by students in the second year of the Veterinary course.

EQUIPMENT.

The facilities provided for the illustration of the above courses, and for practical training are models, specimens and charts in class room. The university farm of 337 acres with large dairy, in charge of the Ohio Experiment Station, serves as illustration of farming operations. A large proportion of the work on the farm is done by agricultural students, who receive compensation therefor.

AGRICULTURAL CHEMISTRY.

COURSES OF INSTRUCTION.

(4.) AGRICULTURAL CHEMISTRY.

First Term.—Five times a week. Principles of chemistry and chemical nomenclature. Lectures and text-book for four or five weeks. For remainder of term chemistry of non-metals, twice a week. Laboratory practice, qualitative analysis, three times a week.

Second Term.—Organic chemistry, twice a week. Laboratory practice, qualitative analysis, three times a week.

Third Term.—Application of chemistry to agriculture, twice a week. Laboratory practice, quantitative analysis, three times a week.

PROFESSOR WEBER.

Required for both courses in Agriculture and for the course in Veterinary Medicine.

In the class room Norton's Chemistry is used. As a guide in qualitative analysis Weber's Select Course in qualitative analysis is employed. In the third term the lectures embrace the following topics: Organic and inorganic ingredients of plants; essential and non-essential ingredients; sources of plant food, soil and air; nature of soil, mechanical portion, nutritive portion, assimilable and reserve plant food; soil exhaustion and amelioration; barn-yard manure and commercial fertilizers; feeding stuffs and feeding rations.

The laboratory work of the third term begins with the quantitative analysis of simple salts as sodium sulphate, potassium chloride, and continues with the analysis of limestones, clays, soils, fertilizers, feeding stuffs, water, milk, butter, cheese and syrup, including the determination of cane sugar, grape sugar and dextrine.

(5.) AGRICULTURAL CHEMISTRY.

First Term.—Twice a week. Lectures on agricultural industries. Laboratory practice. Quantitative analysis, three times a week.

Second Term.—Quantitative analysis, three times a week.

Third Term.—Quantitative analysis, three times a week.

PROFESSOR WEBER.

Required for all students in the course leading to the degree of Bachelor of Agriculture. In the lectures of the first term special attention will be given to such industries as are related to agriculture, as dairying, butter-making, cheese and vinegar manufacture, etc.

In the laboratory the special line of work laid out covers the official methods of analyzing fertilizers, feeding stuffs, and dairy products; also the analysis of fruits, vegetables, alcoholic liquors, etc.

BOTANY AND HORTICULTURE.

COURSES OF INSTRUCTION.

(6.) BOTANY.

Third Term.—Five hours a week. Structural and systematic botany. Wood's new Class-book, or Gray's Revised Botany.

PROFESSOR LAZENBY, MR. WERNER.

Required in Pharmacy and Veterinary courses and of all students in the Short Course in Agriculture.

(7.) GENERAL BOTANY. Lectures, laboratory and field work.

First Term.—Twice a week. Compositæ, eramineæ, etc.
Second Term.—Twice a week. Fungi, algæ, mosses, ferns, etc.
Third Term.—Twice a week. Advanced structural and physiological botany.

PROFESSOR LAZENBY.

Required in Science course, optional in other general courses. Books of reference, Gray's New Manual; Hackel's True Grasses; Cooke's Fungi; Gray's Structural Botany; Bessey's Botany.

(7 *a.*) MEDICAL BOTANY. Lectures and laboratory work.

Second Term.—Twice a week. Required in pharmacy and veterinary courses.

(8.) SPECIAL BOTANY. Lectures, laboratory and field work.

First Term.—Five times a week. Economic botany.
Second Term.—Five times a week. Vegetable histology and physiology.
Third Term.—Five times a week. Advanced structural and systematic botany.

PROFESSOR LAZENBY.

The first term is required in the courses in Agriculture, Pharmacy and Veterinary medicine. The first and second terms are required in the course in Agriculture. Optional in all general courses. Gray's botanical text-books, Henderson's Hand-book of Plants.

(9.) ADVANCED LABORATORY WORK.

Three Terms. Five hours a week. Open to those who have completed either (7) or (8.) Optional in general courses.

(10.) HORTICULTURE. Lectures and practical work.

First Term.—Five times a week. Pomology.

Third Term.—Five times a week. Small fruit culture. Vegetable gardening and seed growing.

PROFESSOR LAZENBY.

Required in Freshman year of the Agricultural course and the second year of the Short Course in Agriculture.

(11.) HORTICULTURE. Lectures and practical work.

First Term.—Five times a week. Original investigation.
Second Term.—Twice a week. Arboriculture and forestry.
Third Term.—Four times a week. Landscape gardening and floriculture.

PROFESSOR LAZENBY AND MR. WERNER.

Required in the Junior year, Agricultural course.

EQUIPMENT.

Among the facilities provided for the illustration of the above courses, and for practical training in the same, are,

1. An herbarium containing specimens of nearly every plant found in the state and fairly representing the flora of the United States and Great Britain.

2. A large collection of fruits and seeds, valuable timber, wood, grasses and various economic products of the vegetable kingdom.

3. A laboratory fairly well equipped with microscopes, reagents, charts and other appliances.

4. A collection of horticultural tools for budding, grafting, pruning, etc.

5. An orchard, containing well selected varieties of the apple, pear, cherry, plum, and quince.

6. A small vineyard containing numerous varieties of the grape.

7. A garden of small fruits, containing all the best varieties of the strawberry, raspberry, blackberry, currant and gooseberry.

8. A vegetable garden with forcing houses, cold frames, experimental plats, conveniences for irrigation, etc.

9. Small nursery and forest tree plantations, with practice rows for budding, grafting, pruning and training.

10. Ornamental grounds and wood land, planted with a large variety of evergreen and deciduous trees and shrubs.

11. A green house with a fair collection of native and exotic plants.

ZOOLOGY AND COMPARATIVE ANATOMY.

COURSES OF INSTRUCTION.

(12.) HUMAN ANATOMY AND PHYSIOLOGY. Lectures, recitations and laboratory work.

First Term.—Lectures and recitations two hours, Monday and Wednesday, and laboratory study one, two by the clock, on Friday. Textbook, "Martin's Human Body," to page 201.

Second Term.—Same text, to page 403.

Third Term.—Same text, to page 606.

PROFESSOR KELLICOTT.

Required of sophomores in general courses.

(13.) HUMAN ANATOMY AND PHYSIOLOGY. Lectures, recitations and demonstrations.

Second Term.—Five hours a week, "Martin's Briefer Course."

PROFESSOR KELLICOTT.

Required of Freshmen in Agriculture and Engineering courses.

(14.) PHYSIOLOGICAL LABORATORY. Monday and Tuesday, 2 to 5 P. M.

First Term.—The use of apparatus, and methods of demonstration.

Second Term.—Vertebrate dissection and methods of bacteriological study.

Third Term.—Physiological chemistry.

Elective in junior and senior years of general courses.

PROFESSOR KELLICOTT.

EQUIPMENT.

The facilities provided for instruction and study of anatomy and physiology are excellent. The laboratory is supplied with skeletons, papier mache manikin and models of eye, ear, larynx, etc., also with apparatus, including myographs, spectroscope, microscopes, chemical outfit, etc.

(15.) ZOOLOGY. Lectures and Laboratory.

First Term.—Lectures two hours a week in general zoology, and one laboratory hour devoted to the examination of forms described in the lectures.

Second Term.—Same, continued.

Third Term.—Entomology is substituted for general zoology. Same method of study. Required in junior year in Agriculture, elective in general courses.

PROFESSOR KELLICOTT.

EQUIPMENT.

The supply of microscopes and necessary appliances is ample. The collections are increasing, and in some groups are quite complete. There is also an abundant supply of alcoholic specimens for class dissection.

(16.) HISTOLOGY. Laboratory, 2 to 5 P. M., Wednesday, Thursday and Friday.

First Term.—Students become familiar with the use of the microscope and its accessories, with test objects, drawing, measuring, preparing reagents, staining and mounting sections, and with the histology of simple tissues.

Second Term.—The study of tissues is continued with practice in hardening, imbedding and sectioning.

Third Term.—Same.

Text-book recommended, "Schæfer's Essentials of Histology," with the manuals of Rauvier, Stirling and others at hand for reference.

Elective in the junior and senior year of general courses—required first year of the Veterinary course.

MR. SIGERFOOS.

EQUIPMENT.

The equipment includes twenty tables, supplied with a good microscope each, and all needed appliances. The laboratory also has excellent microtomes, imbedding baths and other essentials of a histological outfit.

(17.) COMPARATIVE ANATOMY. Laboratory, 2 to 5 P. M., Monday and Tuesday.

First Term.—Comparative osteology.

Second Term.—Myology, Neurology, etc.

Third Term.—Same, continued, with a critical study of vertebrate types.

Elective in sophomore year of the general courses.

MR. SIGERFOOS.

EQUIPMENT.

The outfit consists of series of skeletons, alcoholic specimens and all needed instruments.

(18.) MICROSCOPY. Laboratory.

Second Term.—Two hours per week. Application of the microscope to pharmacognosy.

PROFESSOR KELLICOTT.

VETERINARY MEDICINE.

COURSES OF INSTRUCTION.

(19.) SPECIAL PATHOLOGY AND THERAPEUTICS. Lectures.

Three Terms.—Five times a week. Special attention paid to infectious and contagious diseases, their causes and prevention. Course illustrated by natural objects, photographs, etc. Lectures on the effect of poisons on domestic animals are given in the latter part of the third term.

(20.) SURGICAL DISEASES AND OPERATIONS. Lectures.

First and Second Terms.—Five times a week. Illustrated by skeletons, animal preparations, drawings, etc. Demonstrations in the clinic and in the dissecting room.

(21.) OBSTETRICS. Lectures and demonstrations.

Third Term.—Five times a week.

(22.) PRINCIPLES OF HORSE SHOEING. Lectures and demonstrations.

Third Term.—Five times a week. Illustrated by numerous drawings, skeletons and preparations, and in the clinic.

(23.) BACTERIOLOGY. Lectures and laboratory work.

Third Term.—Three times a week.

All the above lecture courses are given by

PROFESSOR DETMERS

(23*a*.) VETERINARY ANATOMY. Lectures and recitations.

First Term.—Three times a week. On skeletons and anatomical preparations.
Second Term.—Five times a week. Lectures illustrated at the dissecting table.
Third Term.—Three times a week. Lectures illustrated at the dissecting table, and by anatomical preparations.

DR. LAVERY.

(23*b*.) ANATOMICAL LABORATORY.

Second Term.—Three times a week. Dissections and the making of anatomical preparations.

DR. LAVERY.

CLINIC—THE TREATMENT OF SICK ANIMALS. Daily, 10:45 to 11:45 A.M

Daily throughout the course. Professor Detmers and Dr. Lavery. Attendance optional during the first year, but required during the second and third years of the course. Second year students assist third year or senior students, who, under the guidance of Professor Detmers and Dr. Lavery, examine, prescribe for and operate on, sick animals brought to the clinic for treatment.

EQUIPMENT.

The work of the department is done at the veterinary building, a conveniently cated brick building, described on page (37.)

The building affords excellent hospital facilities for the care of patients, and for the study and treatment of their ailments.

The building contains a lecture room, a library, an anatomical and pathological museum, a bacteriological laboratory, a room for microscopy and micro-photography, a dark room, a dispensary, and an office and a bed-room, the latter occupied by two seniors, who have charge of the hospital. The museum contains two skeletons of the horse, one of a cow, one of a camel, and one of an ostrich, all prepared by students. The skeletons of a lion and of a tapir are being prepared. The museum has also a growing collection of pathological preparations.

The library contains a choice collection of books, and the leading periodicals in veterinary science.

The equipment of the department, for surgical work, is unsurpassed. It includes sets of instruments of the latest and most approved patterns, and by the best makers. The collection of microscopes is very fine, including instruments of the highest grade by Tolles, Spencer, Bausch and Lomb, and Zentmayer, with all needed accessories.

MECHANICAL ENGINEERING.

(25.) MECHANICAL LABORATORY.

Exercises preparatory to pattern making in wood.

Exercises in smith work, including the elementary operations of the blacksmith, such as drawing, upsetting, bending, punching, welding.

Exercises in moulding and casting, including sand moulds, caves, and casting in iron and brass.

Exercises in chipping and filing, in which a good number of forms are executed by cutting and filing at the bench.

Exercises in hand turning in iron and brass in the hand lathe.

Exercises in engine lathe work, in turning and fitting.

Exercises in drilling and boring.

Required of those pursuing the course in Mechanical and Electrical Engineering, and portions of it in the courses in Agriculture and Mining Engineering.

PROFESSOR ROBINSON, MR. HAINES AND MR. ———

(26.) ADVANCED MECHANICAL LABORATORY.

An advanced course in grading and accurate measuring as in producing accurate standard plugs and rings. Oil testing. Dynamometric measurement. Use of steam engine indicator, etc. Required in Mechanical Engineering.

PROFESSOR ROBINSON.

(27.) MECHANISM.

First Term.—Twice a week, and,

Second Term.—Five times a week. Lectures on the principles of elementary combinations of mechanism.

Required in Mechanical and Electrical Engineering.

Third Term.—Twice a week. Accurate laying out of a movement, designing and constructing of same.

Required in Mechanical Engineering.

PROFESSOR ROBINSON, MR. HAINES.

(28.) INVENTION, DESIGNING AND DRAWING.

First Term.—Lectures, three times a week, on machine designs and original designing of machine parts. Three times a week.

Lectures, twice a week, on invention of machines and a course of five or more original inventions, and parts fully designed and drawn ready for construction.

Required in Mechanical and Electrical Engineering.

PROFESSOR ROBINSON, MR. BRADFORD.

(29). ANALYTICAL MECHANICS.

First and Second Terms.—Five times a week. Lectures accompanied by Bowser's Mechanics, including statics and kinetics. Required in all the engineering courses except in Mining, the first term only.

PROFESSOR ROBINSON.

(30.) STRENGTH OF MATERIALS.

Third Term.—5 times a week.

1st. Lectures and Wood's book on Elastic Resistance to tension, compression, flexure, torsion.

2d. Lectures and text-book on Ultimate Resistance to Rupture by tension, compression, flexure, torsion.

3d. Lectures on allowed max-stress in structures, and the various modes of determining it, including Factor of Safety. Absolute Modulus of Safety Rational Limit of Safety, and Wöhler's Laws.

HYDRAULICS.

Third Term.—Two weeks in same term with strength of materials. Lectures on flow of water through orifices, weirs, pipes, streams and the gauging of streams. Adaptation of formulas to flow of gases at constant density. Strength of materials and hydraulics required in all the engineering courses.

PROFESSOR ROBINSON.

(31.) THERMODYNAMICS.

First Term.—Five times a week. Lectures on the action of heat. General equations, isothermal, adiabatic, and isodiabatic lines.

Indicator diagrams of perfect engines.

Rankine's and Wood's thermodynamics serve as accompaniement. Required in the Mechanical and Electrical Engineering courses.

PROFESSOR ROBINSON.

(32.) PRIME MOVERS.

Second Term.—Five times a week.

1st. Lectures on heat engines, including hot air, steam, and gas engines.

2d. Water motors, including impulse wheels, turbines, breast and overshot wheels, water engines, wind wheels. Rankine's prime movers and Wood's thermodymamics in accompaniment.

3d. Lectures on valve gears, governors, fly-wheels, counterbalancing, quiet running and economy.

Required in the Mechanical and Electrical courses.

PROFESSOR ROBINSON.

(33.) MACHINERY AND MILLWORK.

Third Term.—Five times a week.

1st. Lectures on efficiency of elementary combinations of machinery. Fly-wheels for machines. Transmission of power.

(34.) TECHNICAL DRAWING.

Third Term.—Five times per week. Lectures on rules and methods for detail drawing, and practice in making same to favorably present the form dimensions, etc., to the workman in practice.

(34a.)

Third Term.—Five times a week. A second course of technical drawing for seniors, including the designing and drawing of some machine, and detailing of same complete, as in office work practice. A subject is chosen which involves the necessity of calculations as based on most of the principles previously taught in the course.

PROF. ROBINSON.

EQUIPMENT.

The mechanical building contains:

1st. One room equipped with hand tools, work-benches, tool cases and material for wood work for eight persons at one time.

2d. One room with a cupola for melting iron, a brass furnace, a moulding floor with sand, flasks, ladles, etc., where castings in iron and brass are made and used in the laboratory practice. Eight persons can find places here at one time.

3d. One room for forging, containing four forges, anvils and equipment, with power blast.

4th. One room with machinery and tools for iron work, with twenty-eight tool cases and room for twenty-eight persons at a time. There are seventeen vises, and corresponding bench room, four engine lathes, four hand lathes, one drill press, one planer, one universal milling machine, one shaper, one universal grinding machine, one surface grinding machine, and two tool grinders.

5th. One room containing a Thurston oil tester, a Riehle testing machine, a dynamometer, a Westinghouse compressed air apparatus, a Leffel turbine, and a cabinet of models of mechanical movements, a collection of standard "plugs and rings," snap gauges, screw gauges, mandrel reamers, three measuring machines, twist drills and screw tools, and samples of manufactured articles.

The engine furnishing power to the mechanical building is fitted up for indicator work, as also the engine in the electrical building, and the ventilating engine in the chemical building. In the boiler house is a Babcock and Wilcox boiler of 200-horse power. Also a tubular boiler of thirty-horse power, either of which serve for experiments on boilers.

MATHEMATICS AND ASTRONOMY.

COURSES OF INSTRUCTION.

(35.) FRESHMAN MATHEMATICS. Recitations.

Three times a week throughout the year. Class divided into four sections.

First Term.—Analytical and spherical trigonometry. Lock's Elementary Trigonometry completed and Lock's Higher Trigonometry.

Second Term.—Higher algebra and theory of equations. Wentworth's College Algebra, chap. 12 to 31.

Third term.—Bowser's Analytical Geometry (120 p.).

PROFESSOR BOHANNAN, ASS'T PROFESSOR MCCOARD.

Required in Science and Engineering courses.

Second and third terms elective in B. A. and B. Ph. courses.

(36.) SOPHOMORE MATHEMATICS. Lectures and recitations.

Five times a week throughout the year.

First Term.—Charles Smith's Conic Sections (nine chapters).

Second Term.—Bowser's Differential Calculus.

Third Term.—Bowser's Integral Calculus.

PROFESSOR BOHANNAN.

Required in engineering courses. Elective in Science course.

(37.) JUNIOR MATHEMATICS. Lectures and recitations.

Three times a week throughout the year.

First Term.—Least squares (Merriman) completed. Mathematical astronomy (Doolittle) begun.

Second Term.—Mathematical astronomy and geodesy.

Third Term.—Mathematical astronomy (and observations).

PROFESSOR BOHANNAN.

Students in Electrical Engineering take only the least squares for one-third of the term; those in Mechanical Engineering take only first and third terms; students in civil Engineering take the work of all three terms.

(40.) JUNIOR ELECTIVE.

Five times a week throughout the year. Advanced mathematics. Topics changed from year to year to meet the wishes of students.

PROFESSOR BOHANNAN.

Elective in junior year of Science course.

(40*a*.) SENIOR ELECTIVE.

Five times a week throughout the year. Advanced mathematics.

PROFESSOR BOHANNAN.

Elective in Science course.

(41.) DESCRIPTIVE ASTRONOMY. Lectures and recitations.

PROFESSOR BOHANNAN.

Five times a week throughout the year. Young's General Astronomy.

Equipment. 5-inch equatorial (Clark); sextant; theodolites; 1-inch transit.

PHYSICS AND ELECTRICAL ENGINEERING.

COURSES OF INSTRUCTION.

(42.) SOPHOMORE PHYSICS. Lectures and recitations.

First Term.—Three times a week. Mechanics and heat.

Second Term.—Three times a week. Electricity and magnetism.

Third Term.—Three times a week. Sound and light. Anthony & Brackett's Physics.

PROFESSOR THOMAS.

Required in engineering and Science courses. Optional in other courses.

(43.) SOPHOMORE PHYSICS.

Three terms, twice a week. Extension of (42), with practice in solution of problems

MR. MERSHON.

Required in Electrical Engineering. Optional in other courses.

(44.) JUNIOR ELECTRICITY AND MAGNETISM. Lectures and recitations.

First Term.—Three times a week. Cumming's "Electricity." Mascart & Joubert's "Electricity and Magnetism."

MR. MERSHON.

Required in Electrical Engineering course.

SENIOR ELECTRICAL ENGINEERING. Lectures.

First Term.—Twice a week. Telephone and telegraph. Theory and practice.

ASS'T. PROFESSOR WHITNEY.

(46.) ELECTRICAL ENGINEERING. Lectures.

First Term.—Three times a week.

Second Term.—Daily.

Third Term.—Three times a week. Theory of dynamo-electric machinery, including direct current and alternating current generators and motors; methods of regulation and control; circuits, lamps and auxiliary apparatus; storage batteries; applications of electricity to street car and mine working; design, construction and management of plant, central and isolated; specifications and contracts; law of contracts; rights and liabilities of electric companies, etc.

PROFESSOR THOMAS.

Required in electrical engineering. Optional in other courses.

(47.) TECHNICAL DRAWING.

First and Second Terms.—Three times a week.

Third Term.—Five times a week. Working drawings of electrical apparatus designed by the student; station, circuit, machine and other technical drawing. Blue printing, etc.

ASS'T. PROFESSOR WHITNEY.

(48.) PHYSICAL LABORATORY. Sophomores in electrical engineering.

First Term.—Tuesday and Wednesday, 2 to 4 P. M. Elementary Manipulation. Length, mass and time measurement. Work in density, elasticity, etc. Work in heat begun.

Second Term.—Monday and Tuesday, 2 to 5 P. M. Heat continued. Electricity and Magnetism. Text, Stewart & Gee's "Practical Physics," books of reference, Pickering, Kohlrausch, Glazebrook & Shaw, Ayrton, and others.

4 Cat. O. St. U. ASS'T. PROFESSOR WHITNEY AND MR. MERSHON.

(49.) PHYSICAL LABORATORY. Lectures and laboratory work. Juniors in electrical engineering.

Second Term.—Wednesday, Thursday and Friday, 2 to 5 P. M.

Third Term.—Monday and Tuesday, 2 to 5 P. M. Theory and practice of magnetic and electrical measurement, including the testing and standardizing of instruments; conductivity of conductors; insulation resistance, and capacity of insulated conductors and cables; temperature coefficients; commercial measuring and testing instruments, etc. Strength and distribution of magnetic fields; magnetic moments, permeability, etc. Work in light, including optical constants; spectroscopy; photometry of gas, electric, and other lights, etc.

PROFESSOR THOMAS.

(50.) PHYSICAL LABORATORY.

Three terms. Monday, Tuesday, Wednesday, 2 to 5 P. M.

PROFESSOR THOMAS, ASSISTANT PROFESSOR WHITNEY AND MR. MERSHON.

Optional in Science, Arts, Philosophy and Agricultural courses. Required in senior year of Mechanical and Civil Engineering courses.

(51.) PHYSICAL LABORATORY.

Five hours. A second year's work for students who have taken the preceding course.

PROFESSOR THOMAS.

The work in the physical laboratory begins with exercises in length, mass and time measurements, making use of scales, tapes and bars, micrometer screws, micrometer microscopes, the dividing engine, the cathetometer, the balance, chronometers, chronoscopes, etc. This course is intended to give the student facility in the use of instruments, and knowledge of the theory of their construction and adjustment. The determination of various physical constants follows, with elementary exercises in heat, light, electricity and magnetism, after which the student takes up such advanced work as his taste and skill permit. The experimental work is accompanied by instruction in methods, and in the discussion of results.

(52.) ELECTRICAL LABORATORY.

Seniors in Electrical Engineering. Thursday and Friday, 2 to 5 P. M.

PROFESSOR THOMAS AND MR. MERSHON.

A full experimental course in the handling and testing of steam and gas engine dynamos, motors, storage batteries, circuits, instruments, etc. Special courses are given, suited to the preparation and object of the student.

EQUIPMENT.

The department has an excellent equipment of apparatus, to which additions are constantly being made. The apparatus includes a large collection of pieces for illustration of the general lecture-room work, but is principally chosen for accurate measurement in the laboratory. A set of standards of length, capacity and mass, sent us under the act of congress supplying such sets to the several agricultural colleges, is in the possession of the department. The pieces are copies of the United States Standards, made by the Coast Survey at Washington.

Among our principal pieces of apparatus are a dividing machine by Fauth & Co.; chronometers by Parkinson and Frodsham, and by Negus, the latter a break circuit; a chronograph by Fauth & Co.; a Hipp's chronoscope; cathetometers by Salleron and by the Geneva Society, the latter an exceptionally fine instrument; Regnault's apparatus for vapor tension, for expansion of gases, and for specific heat; Melloni-Tyndall apparatus for radiant heat; standard thermometers by Baudin and others; Rutherford and Rowland diffraction gratings; Rowland's spectrum photographs; spectroscopes by Browning, Apps and others; Salleron's complete apparatus for projections in polarized light; lanterns for projections by the lime light and the arc light; a variety of sound apparatus from Koenig; portable and quadrant electrometers; Thomson galvanometers of high and low resistance: Thomson current and potential galvanometers; Weidemann, Kohlrausch and other galvanometers; standard resistance coils with Cavendish laboratory certificate; several sets of resistance coils and bridges; a Kew magnetometer; a gas engine; and the state photomeric apparatus.

The Electrical Laboratory affords excellent facilities for experimental and practical work with dynamo machinery. Machines of the leading makers are provided for incandescent lighting by continuous and by alternating currents, aggregating a capacity of about eight hundred sixteen candle-power lamps. Machines for arc lighting, constant potential and constant current motors, a fifty-five cell storage battery, Sir William Thomson's electric balance for standardizing galvanometers, Siemens' electro-dynamometers, Ayrton and Perry and other ammeters, Cardew, Weston, and Ayrton and Perry voltmeters, Deprez & D'Arsonval galvanometers, photometers, steam engine indicators, prony brakes and floating cradle dynamometers are provided and enable us to carry out a wide range of experimental work.

We may fairly add, as a part of the facilities afforded our students, the valuable opportunities given us by the electric companies of Columbus. The Columbus Electric Light and Power Co., using the Thomson-Houston system for arc and incandescent lighting, and the Brush motors, and the Columbus Edison Company, using the Edison system of lighting, generously allow us not only to inspect their works, but also to experiment freely with their machinery and circuits.

CIVIL ENGINEERING.

COURSES OF INSTRUCTION.

(53.) LAND SURVEYING. Recitations and field work.

First Term.—Four times a week. Johnson's "Theory and Practice of Surveying."

MR. KEMMLER.

(54.) RAILROAD SURVEYING. Recitations and field work.

Third Term.—Four times a week. Searle's "Field Engineering."

MR. KEMMLER.

(55.) TOPOGRAPHICAL SURVEYING. Lectures, field work and drawing.

First Term.—Three times a week. Johnson's Surveying used for reference.
PROF. BROWN, Lecturer.
MR. KEMMLER, Field work and drawing.

(56.) STEREOTOMY. Recitations and drawing.

Second Term.—Three times a week. Warren's Stereotomy—(Stone cutting.)

PROFESSOR BROWN.

(57.) BRIDGE STRAINS. Recitations.

Third Term.—Five times a week. Du Bois' Stains in Framed Structures (Part I.)

PROFESSOR BROWN.

(58.) TECHNICAL DRAWING. Drawing and blue printing.

Third Term.—Three times a week.

MR. KEMMLER.

(59.) CIVIL ENGINEERING. Recitations and lectures.

First Term.—Five times a week. Baker's "Masonry Construction."
Second Term.—Five times a week. Lectures.
Third Term.—Five times a week. { Fanning's "Water Supply." / Adams' "Drains for Populous Districts.

PROFESSOR BROWN.

(60.) PLANS AND SPECIFICATIONS. Lectures and Drawing.

First Term.—Five times a week. Bridge designing. DuBois' "Strains in Framed Structures" used for reference.
Third Term.—Five times a week. Lectures and drawing.

PROFESSOR BROWN.

(61.) FIELD MEASUREMENT. Recitations and field work.

Second Term.—Three times a week. Hodgman and Bellow's "Manual of Land Surveying."

MR. KEMMLER.

Courses No. 53 and 54 are in the sophomore year of course in Civil Engineering.
" 55–56–57–58 " junior " " " "
" 59–60 " senior " " " "
" 57 is " " " " Mine Engineering.
" 61 " " first year of Short Agricultural course.

EQUIPMENT.

The facilities provided for the illustration of the above courses and for practical training are, four transits, three levels, solar compass, plane-table, prismatic compass, Abney hand level, level rods, sight poles, chains, tapes, etc. Fifteen improved drawing tables, set of Schröder models in stereotomy, Schröder roof truss models, set of models of wooden joints, small collection of photographs of bridges both when finished and in course of erection, new improved cement testing machine, blue print room, sets of stone mason's tools for working stereotomy models out of plaster blocks, magic lantern, small collection of shop drawings of bridges, etc., sets of drawing instruments, Thacher's calculating machine.

MINING AND METALLURGY.

COURSES OF INSTRUCTION.

(62.) METALLURGY. Lectures.

First and Second Terms.—Five times a week. A course of lectures upon fuel and its uses, iron and steel, copper, lead, gold and silver, their properties, tests, ores and details of the modes of reduction. Students are required to take notes and also to study references to standard works and journals.

PROFESSOR LORD.

Required in junior year. Course in Mining Engineering.

(63). METALLURGICAL LABORATORY. Lectures and laboratory work.

Three Terms of laboratory practice in the analysis of iron and steel, iron ores, fuels, clays, etc., by the most approved methods as practiced in the technical laboratories of metallurgical works.

PROFESSOR LORD.

(64.) ASSAYING.

One term of laboratory work in the assaying of gold, silver and lead ores by furnace methods. Oral instruction, with references to standard books on assaying.

PROFESSOR LORD.

(65.) MINERALOGY. Lectures.

Second Term.—Three times a week. With references to Dana's Manual of Mineralogy and Lithology as a text book. Students required to keep notes, and to study specimens in the collection of minerals. A short introductory course is given on crystallography, illustrated by wooden models.

PROFESSOR LORD.

(66.) MINERALOGY. Lectures.

Third Term.—Three hours a week, in E. M. course, Sophomore year. Same as above, but more practical; intended for more mature students and arranged so as to be preparatory to the determinative mineralogy.

PROFESSOR LORD.

(67.) DETERMINATIVE MINERALOGY.

Second Term.—Two afternoons a week, laboratory course in practical determination of minerals by physical and chemical tests. Brushes' Determinative Mineralogy is used as a manual. Each student is furnished with a set of apparatus and works under the instructor's inspection.

PROFESSOR LORD.

(68.) ORE DRESSING. Lectures.

Third Term.—Five times a week. Instruction in the methods of concentrating and enriching ores by mechanical means. Lectures with reference to Rittinger's Auf Bereitung, Callon's Cours D'Exploitation des Mines, Kunhardt Ore Dressing and various papers in technical journals.

PROFESSOR LORD.

(69.) MINERAL CHEMISTRY. Lectures and Laboratory Practice.

Three Terms.—Five hours in the first and third, two hours in the second term in the Short Mining course. The first term is a brief course in elementary chemistry, taught partly by lectures and partly by laboratory practice of a simple character. The second and third terms are devoted to lectures upon fire-damp, mine explosions, explosives, boiler waters, poisonous gases, iron ores, iron and steel, their properties and modes of manufacture, coal and coke, etc.

PROFESSOR LORD.

(70.) MINING ENGINEERING. Lectures.

Three Terms.—Five hours a week mining operating, mining machinery, ventilation, shaft sinking, working out deposits, etc. Constant reference is required to the standard works and to the leading technical journals, with practice in designing mine plants, draughting and estimates.

PROFESSOR SPERR.

(71.) MINE SURVEYING. (Long course).

Field practice in the use of instruments for surface and underground surveys. Full notes are taken, and maps and plans made in the drawing room. Davies' Surveying, by Van Amringe, is used as a text book.

PROFESSOR SPERR.

(72.) MINE SURVEYING. (Short course). Lectures and field practice.

One Term.—Five hours a week. This is similar to that of the long course, but more elementary. The same book is used. The students have more practice in the drawing room.

PROFESSOR SPERR.

(73.) VENTILATION AND HAULING.

Second Term.—Five hours a week. Lectures are of an elementary character, illustrated by experiments and maps of mines and models when possible, tests by safety lamps and anemometers, and solution of problems of air distribution in coal mines.

PROFESSOR SPERR.

(74.) MINE OPERATING.

Third Term.—Five hours a week. A course of lectures and practical instruction in mine book-keeping and accounts, cost of working, etc., particularly adapted to Ohio coal mining.

PROFESSOR SPERR.

(75.) ALGEBRA. Recitations.

Three Terms.—Five hours a week. The short mining students are taken in a special class and taught in the department. Wentworth's Elementary Algebra is used as a text-book.

PROFESSOR SPERR.

EQUIPMENT.

The draughting room is large, well lighted and provided with a desk for each student. A work shop in the attic is fitted with tools for making models, and for experiments in ventilation. The metallurgical laboratory has all the appliances for the most modern methods of technical analysis as practiced in iron and steel laboratories, including gas analysis. A furnace room in the basement is fitted for gold and silver assaying, with improved muffle and crucible furnaces.

The lecture room in metallurgy has arrangements for projecting photographs of machines, mines and furnaces for class illustrations, and there is a large collection of such views. There is a photographic room with blue printing facilities in the

where students can learn to make copies of the drawings used in illustrating the lectures.

A collection of minerals and rocks with a large set of rock sections is provided for, illustrating the mineralogy, as well as sets of blow pipe apparatus for the students in determinative mineralogy.

DRAWING.

COURSES OF INSTRUCTION.

(76.) FREEHAND DRAWING. Freshman.

Outline drawing from copy and models. Charcoal and crayon drawing from copy and plaster casts. Individual attention given.

First Term.—Twice a week (four hours' drawing).

Second Term.—Once a week (two hours' drawing).

Third Term.—Once a week (two hours' drawing).

ASST. PROF. BRADFORD AND MR. TAYLOR.

(77.) FREEHAND DRAWING. Sophomore.

Outline drawing from copy and models, charcoal and crayon drawing from copy and plaster casts. Individual attention given.

Once a week (two hours' drawing) through the year.

ASST. PROF. BRADFORD AND MR. TAYLOR.

(78.) LETTERING. Lectures and practice.

Third Term.—Twice a week.

Lectures.—Care and manipulation of instruments. Proper construction of letters. Proper construction of titles.

Practice.—Nine plates of letters.

ASST. PROF. BRADFORD.

(79.) MECHANICAL DRAWING. Lectures, recitations and practice.

First Term.—Three times a week. Faunce's "Mechanical Drawing." One hour lecture and recitation. Four hours' practice.

Second Term.—Three times a week. Church's "Descriptive Geometry." Two hours' lecture and recitation. Two hours' practice.

Third Term.—Three times a week. Church's "Shades, Shadows and Perspective." One hour lecture and recitation. Four hours' practice.

ASST. PROF. BRADFORD.

(80.) PHOTOGRAPHY. Lectures and practice.

Third Term.—Lectures, history of photography; lenses; exposing and developing; chemistry of photography; printing; lantern slide making; applications of photography.

Practice.—Out-door work; interiors; flash light work; copying; lantern slide making; printing and enlargements.

ASST. PROF. BRADFORD.

Freehand Drawing.—(Freshman 76) is taken by all students of the courses in engineering.

Freehand Drawing.—(Sophomore 77) is taken by all students of the course of Bachelor of Science, and elective by the students of the courses of Bachelor of Arts and Bachelor of Philosophy.

Lettering.—(78) is taken by all students (of Freshman year) of the courses in engineering.

Mechanical Drawing.—(79) is taken by all students (in Sophomore year) of the courses of engineering.

EQUIPMENT.

The facilities provided for the illustration and practical training in the above courses are: For freehand drawing, flat copies and shaded copies, wooden models, plaster casts, easels and tables to work on. For Mechanical Drawing: A set of the celebrated J. Schröder's models and drawing tables with adjustable top to work on. For Photography: A well arranged and equipped dark room, developing outfits, printing outfits, enlarging, reducing and copying camera and three view cameras with lenses of long and short focus, and a rapid shutter for instantaneous work.

MILITARY SCIENCE AND TACTICS.

LIEUTENANT OGLE, U. S. A.

This department is under the charge of an officer of the regular army, who is specially detailed for the purpose. The course of instruction is both practical and theoretical, and is given by means of a systematic drill, supplemented by lectures and recitations, and is so arranged as to occupy five hours per week throughout the year. For purposes of drill, all students enrolled in the department are organized in a battallion the officers of which are selected from those students who have shown special proficiency in the work of the department. Officers receive commissions and non-commissioned officers warrants, issued by the university. A military band has also been organized in connection with this department, and is supplied with instruments belonging to the university.

The practical course in infantry embraces small-arm target practice and all the movements prescribed by the drill regulations of the U. S. Army applicable to a battalion. Instruction in artillery embraces such portions of the United States drill regulations as pertain to the formation of detachments, manual of the piece, mechanical maneuvers, aiming drill and saber exercise. Instruction also includes duties of sentinels, the various ceremonies performed by troops and military signaling. The theoretical instruction includes a systematic and progressive course in the drill regulations of the U. S. Army the preparation of the usual reports and returns pertaining to a company, the organization and administration of the U. S. Army and the elementary principles governing in the art of war.

The equipment of the department consists of two hundred Springfield cadet rifles and sets of infantry equipments, two 3-inch rifles, sixteen officers' swords and belts, eighteen sabers and belts, also the necessary equipment for instruction in signaling and instruments for the band.

The U. S. Ordnance Department furnishes an annual allowance of one hundred blank cartridges and three hundred friction primers for the 3-inch rifles, one thousand rounds of ball and one thousand rounds of blank cartridges for cadet rifles.

PHARMACY.

COURSES OF INSTRUCTION.

(81.) PHARMACY. Lectures and Laboratory Work.

First Term.—Lectures three times a week. Remington's Practice of Pharmacy. General pharmaceutical processes.

Second Term.—Lectures twice a week. Laboratory practice daily. United States Pharmacopœia, officinal preparations.

Associate PROFESSOR KAUFFMAN.

Required in second year of Pharmacy and Veterinary courses.

(82.) PHARMACY. Lectures and Laboratory Work.

Third Term.—Lectures twice a week.
Laboratory practice daily, the dispensatories, officinal preparations.

Associate PROFESSOR KAUFFMAN.

Required in Pharmacy course.

(83.) PHARMACY. Lectures and Laboratory Work.

First Term.—Lectures twice a week. Laboratory practice daily. Pharmaceutical chemistry.

Remington's Practice of Pharmacy. Unofficinal preparations. The National formulary.

Second Term.—Lectures once a week. Laboratory practice three times a week. Extemporaneous pharmacy, prescription practice.

Third Term.—Lectures twice a week. Dispensing practice daily. Prescription practice daily.

Associate PROFESSOR KAUFFMAN.

Required in Pharmacy course.

EQUIPMENT.

The facilities provided for illustration of this work and for practical training are as follows: The apartments assigned to this work occupy the west end of the chemical building, first floor and basement. The lecture room will accommodate sixty students, and is provided with a large lecture table and supplied with gas and water, and other conveniences for experiment. About the walls are arranged cases in which are exhibited elegant and costly chemicals, rare and curious drugs, elegant pharmaceuticals and so on. Adjoining this room is the preparation room and store room, where the supplies and apparatus and material are kept, and where the apparatus for experiment and illustration before classes are prepared. Also adjoining this room is the professor's private laboratory. The main laboratory has desks for thirty students, each one provided with gas and water, and sufficient storage space for material and apparatus. The laboratory is furnished with apparatus for distilling and reclaiming, with mills, balances, drying closets, steam vaporizers, hoods, and other special apparatus for pharmaceutical work. Opening into the laboratory is the drug store. This drug store is complete, and is in itself a cabinet of officinal drugs, and all preparations thereof. It is provided with a prescription desk and all apparatus adapted for training in prescription work. Here, also, is a large reading table, where are kept the various pharmaceutical journals, the dispensatories, and many books of reference. Also adjoining the main laboratory is the balance room, which is well provided with analytical balances, specific gravity balances and microscope, all of which are intended for higher pharmaceutical work.

In the balance room is also a cabinet of crude drugs, which have been classified and numbered, but bear no name. This cabinet is adapted for the study of Pharmacogurey.

In addition to the foregoing equipment, the department is possessed of an extensive range of apparatus, by means of which any branch of work in pharmacy can be successfully pursued. The department is complete in all its details, and affords unexcelled opportunity for the study of pharmacy.

GENERAL CHEMISTRY.

COURSES OF INSTRUCTION.

(84.) ELEMENTARY CHEMISTRY. Lectures and text-book.

First Term.—Four times a week. Chemistry of the non-metals.

Second Term.—Twice a week. Chemistry of the metals.

PROFESSOR NORTON.

Required in Pharmacy course, and in all four-year courses, except Agriculture.

(85. ELEMENTARY CHEMISTRY. Lectures and text-book.

Third Term.—Four times a week. Chemistry of the carbon compounds.

PROFESSOR NORTON.

Optional in Arts and Philosophy courses. Not required in Electrical Engineering. Other courses as above.

(86.) ANALYTICAL CHEMISTRY. Lectures and laboratory work. Qualitative analysis. Three times a week, 2 to 5 P. M. through the year.

First Term.—Reactions in the "dry way" and determination of twenty-five unknown substances.

Second Term.—Reactions in the "wet way." Bases.

Third Term.—Same continued. Seventy-five unknown substances. Acids begun.

PROFESSOR NORTON, MR. KEFFER.

This course is elective in the general degree courses, and required in the second year of the course in Pharmacy.

(87.) ANALYTICAL CHEMISTRY. Lectures and laboratory work. Three times a week, 2 to 5 P. M. through the year. Quantitative analysis.

First Term.—Quantitive analysis begun.

Second erm.—Gravimetric analysis of known compounds.

Third Term.—Same, with volumetric analysis and special work.

PROFESSOR NORTON.

(87*a*) CHEMISTRY. Lectures and laboratory.

First Term.—Once a week. Stoichiometry.

Second Term.—Twice a week. Toxicology.

Third Term.—Three times a week. Proximate organic analysis.

MR. KEFFER.

Optional in general courses, and required in the third year of the course in Pharmacy. Professor Norton lectures weekly on the work in hand.

(88.) ANALYTICAL CHEMISTRY.

Advanced chemistry and research. Ten hours a week through the year.
PROFESSOR NORTON.

The department has excellent facilities for its work, in the new chemical laboratory, described on page 37. The laboratories of the department accommodate sixty students. The general lecture room is large and well lighted, and all needed facilities are provided for the full experimental illustration of the lecture courses. The department is generously supplied with the best apparatus and materials for both lecture and laboratory work, and has also a growing collection of specimens illustrating the application of chemistry to the arts

GEOLOGY.

COURSES OF INSTRUCTION.

(89.) GENERAL GEOLOGY. Lectures.

First Term.—Five times a week. Subjects: Cosmical Geology, Lithological Geology, Dynamical and Structural Geology.

Books of reference used by students in preparation of their work: Green's *Physical Geology*, Geikie's *Text-book of Geology*, Le Conte's *Elements of Geology*, Hunt's *Chemical Geology*, Daubree's *Geologie Experimentale*, etc., etc.

Second Term.—Five times a week. Subjects: Paleontological Geology, Historical Geology.

Books of reference used by students in preparation of their work: Nicholson's *Paleontology*, Zittel's *Paleontologie*, *Ohio Geological Reports*, *Palæontology of New York*, *etc.*

PROFESSOR ORTON.

Required in junior year C. E., and in senior year E. M. and E. Sc. courses. Optional in B. A. and B. Ph. and B. Ag. courses.

(90.) ECONOMIC GEOLOGY. 11 a. m.

Second Term.—Lectures. Five times a week.

Subjects: 1. Economic materials of stratified rocks, clays, limes, cements, coals, iron ores, etc., etc., phosphate, petroleum. 2. Economic materials derived from veins, igneous rocks, gold, silver, copper, mercury, etc., etc. Gems.

Books of reference used by students in preparation of their work: *Publications of U. S. Geological Survey*, *State Geological Surveys*, Phillips' "*Ore Mining*," etc.

PROFESSOR ORTON.

Required in junior year, C. E. course, and in senior year, E. M. course.

(91.) ELEMENTARY GEOLOGY. Lectures and Recitations.

Second Term.—Five times a week.

Subject: Elements of Geology. Text-book: *Le Conte's Text Book of Geology.* Lectures on *Dynamical and Structural Geology.*

PROFESSOR ORTON.

Required in junior year in M. E. course I, and in second year, Short Mining course.

(92.) PALEONTOLOGY. Museum work.

Course not fully organized.

The university is able to present unusual advantages for the study of geology. By act of the legislature it has been put in possession of all the collections made by the late geological survey, and these collections have been supplemented by valuable additions of fossils and minerals from various sources. The state collection embraces a very complete representation of every geological formation shown in Ohio.

PHILOSOPHY.

COURSES OF INSTRUCTION.

All classes in this department meet three times a week.

93.) PSYCHOLOGY. Recitations, discussions and lectures.

First Term.—The senses and the intellect.
Second Term.—The feelings and the will.

(94.) ETHICS. Recitations, discussions and lectures.

Third Term.—Cutler's "Beginnings of Ethics."

(95.) LOGIC. Recitations, discussions and praxis.

First Term.—The elements of logic, deductive and inductive. Jevon's "Elementary Lessons."
Second Term.—Scientific method. Jevon's "Principles of Science."

(96.) HISTORY OF PHILOSOPHY. Recitations discussions and lectures.

Third Term.—Lectures on ancient philosophy and recitations in modern philosophy. Schwegler's "History of Philosophy."

(96*a*.) RECENT PHILOSOPHY.

Two hours a week through the year. Reading and discussion of leading books and authors of the last half century. Especial attention is given to the relations of philosophy to science, and the doctrine of evolution. A theme is required once a term from each student.

The above courses are all given by

PROFESSOR SCOTT.

(93 and 94.) Required in the junior year of the courses for degrees of Bachelor of Arts, Bachelor of Philosophy, and Bachelor of Science, and elective in the senior year of the course for the degree of Bachelor of Agriculture.

(95 and 96.) Required in the senior year of the courses for the degree of Bachelor of Arts, and Bachelor of Philosophy, and elective in the senior year of the course for the degree of Bachelor of Science.

(96*a*.) Elective in the senior year of the courses in Arts and Philosophy.

HISTORY.

COURSES OF INSTRUCTION.

(97.) CONSTITUTIONAL AND POLITICAL HISTORY OF THE UNITED STATES. Lectures and recitations.

First Term. Twice a week. Lectures on the political and constitutional history of the colonies and states to 1789.

Second Term.—Twice a week. Recitations and lectures on the constitution and elementary constitutional law. Cooley's "Elements of Constitutional Law."

Third Term.—Twice a week. Political and constitutional history, 1789–1880. Johnston's "American Politics."

PROFESSOR KNIGHT.

This course is required of juniors in the Arts and Philosophy courses, and is open as an elective in the senior year of the course in Agriculture, and in the Science course.

(97*a*.) MEDIÆVAL AND MODERN EUROPEAN HISTORY. Recitations.

Three Terms.—Two hours a week.

This is a preliminary and general study of the main features of mediæval and modern European history. This course is an elective in the Sophomore year of the Arts and Philosophy courses.

PROFESSOR KNIGHT.

(98.) HISTORY A. Recitations and lectures. A study of the mediæval and modern history of continenal Europe.

First Term.—Three times a week. Mediæval history.

Second Term.—Three times a week. Mediæval and early modern history. Lodge's "History of Modern Europe."

Third Term.—Three times a week. Modern history. Lodge's "History of Modern Europe."

PROFESSOR KNIGHT.

This course is taken by students in the junior or senior year of the Philosophy course (Latin), and is open as an elective in the junior year of the courses in Arts, Philosophy (modern languages) and Science. After 1891–92 this course will be radically changed.

[*This is a biennial course (alternating with History B), and may be expected in the year* 1891–92.]

(99.) HISTORY B. Lectures and recitations.

First and Second Terms.—Three times a week. English history, general and constitutional. Ransome's "Short History of England."

Third Term.—Three times a week. The development of constitutional liberty and the tendency to consolidation in the nineteenth century.

PROFESSOR KNIGHT.

This course is taken by students in the junior or senior year of the Philosophy course (Latin), and is open as an elective in the junior year of the courses in Arts, Philosophy (modern languages) and Science.

[*This is a biennial course (alternating with History A) and will not be given in the year* 1891–92.]

(100.) HISTORY C. Seminary.

Three Terms—Two hours a week.

This course is designed to afford the student an opportunity for protracted investigation of a few special subjects in American history, the results of the investigations to be presented in special papers or theses. In addition to the positive information obtained upon his special subjects, the student becomes familiar, by direct handling, with books, documents and other material for historical work, and with methods of historical investigation.

PROFESSOR KNIGHT.

This course is open to all students who have completed the course in the Constitutional and Political History of the United States.

POLITICAL SCIENCE.

COURSES OF INSTRUCTION.

101.) POLITICAL ECONOMY. Lectures.

First and Second Terms.—Twice a week. Lectures upon the elements and principles of the science.

Third Term.—Twice a week. Discussion of the leading practical problems of industrial society.

PROFESSOR KNIGHT.

This course is taken by students in the junior year of the Science course and in the enior year of the courses in Arts, Philosophy and Agriculture.

102.) INTERNATIONAL LAW. Recitations, with occasional lectures.

First and Second Terms.—Twice a week. Gallaudet's International Law.

PROFESSOR KNIGHT.

This course is followed by :

103.) MUNICIPAL GOVERNMENT. Lectures.

Third Term.—Twice a week.

PROFESSOR KNIGHT.

The two courses last named are open to students in the junior and senior year of the ourses in Arts, Philosophy and Science.

ENGLISH LANGUAGE AND LITERATURE.

COURSES OF INSTRUCTION.

104.) ENGLISH A. Lectures and text-book.

Twice a week through the year. Rhetoric and composition. Welsh's Complete Rhetoric. Essays and prescribed reading.

ASSOCIATE PROFESSOR CHALMERS.

Required of all freshmen in Arts, Philosophy, Science and Engineering, and of all juniors in Agriculture. Not required in the short courses.

(105.) ENGLISH B. Lectures and text-book.

Twice a week, through the year.

First Term.—Period of early modern English. Morris's Chaucer's Prologue and Knight's Tales. Additional tales are read.

Second and Third Terms.—Welsh's Development of English language and Literature.

ASSOCIATE PROFESSOR CHALMERS.

Required of all sophomores in Arts and Philosophy. Elective to sophomores in Science.

(106.) ENGLISH C. Study of masterpieces. Essays and critiques.

Twice a week through the year. English literature.

First and Second Terms.—Seminary in English authors from Chaucer to Tennyson. Representative masterpieces studied: More's Utopia, Spenser's Faery Queen, Bacon's Essays, Milton's Paradise Lost, Walton's Complete Angler, Bunyan's Pilgrim's Progress, Addison's Sir Roger DeCoverley, Pope's Essay on Man, Johnson's Rasselas, Burke's Reflections on the French Revolution, Goldsmith's Vicar of Wakefield, Cowper's Task, Keats' Hyperion, Byron's Childe Harold, Coleridge's Ancient Mariner, Wordsworth's Excursion, Ruskin's Modern Painters, Thackeray's Vanity Fair, George Eliot's Silas Marner, Carlyle's Sartor Resartus, Tennyson's In Memoriam.

Third Term.—Seminary in American literature. Representative authors studied: Irving, Poe, Bryant, Whittier, Longfellow, Holmes, Hawthorne, Lowell and Emerson.

ASSOCIATE PROFESSOR CHALMERS.

Open to juniors in Arts and Philosophy. English C may be taken in two successive years.

(107.) ENGLISH D. Lectures, essays and critiques.

Twice a week through the year. Shakespeare and the English drama. One lecture a week on the history of the English drama, from the Miracle plays to the closing of the theaters. Essays and critiques on the plays of Shakespeare once a week. Plays selected: A Midsummer Night's Dream, The Merchant of Venice, As You Like It, Twelfth Night, The Tempest, Henry IV., Richard III., Hamlet, Macbeth, Othello, King Lear, Julius Cæsar and Coriolanus.

ASSOCIATE PROFESSOR CHALMERS.

Open to seniors in Arts and Philosophy.

(108.) SOPHOMORE RHETORICALS. Oral discussions of topics.

Once a week through the year. Each student presents three essays and three critiques. Required of all sophomores in Arts, Philosophy, Science, and Engineering (full courses).

ASSOCIATE PROFESSOR CHALMERS.

(109.) JUNIOR RHETORICALS. Oral discussion of topics.

Once a week through the year. Each student presents three essays and three critiques. Required of all juniors in Arts, Philosophy, Science and Engineering (full courses).

ASSOCIATE PROFESSOR CHALMERS.

GREEK LANGUAGE AND LITERATURE.

(110.) FRESHMAN YEAR. Recitations, elementary Greek.

First Term.—Five times a week. Goodwin's Greek Grammar and White's "First Lessons in Greek."

Second Term.—Five times a week. Grammar and lessons (to LVII) continued. Xenophon's Anabasis (Kelsey) begun.

Third Term.—Five times a week. Xenophon's Anabasis (Kelsey), books II and III.

PROFESSOR SMITH.

SOPHOMORE YEAR. Recitations and lectures.

First Term.—Three times a week. Xenophon's *Memorabilia;* exercises in Greek prose composition.

Second Term.—Three times a week. Herodotus, book VIII (Boise and Freeman's selections). Epochs of Greek history. (Cox's School History of Greece).

Third Term.—Three times a week. Homer's *Odyssey.* Studies in Greek literature.

PROFESSOR SMITH.

(112.) JUNIOR YEAR. Recitations and lectures.

First Term.—Three times a week. Thucydides, book I. Lectures in Greek history.

Second Term.—Three times a week. Plato, *Apology of Socrates* and *Crito.* Essays in Greek philosophy.

Third Term.—Three times a week. Demosthenes' Olynthiac Orations. Lectures on the Attic Orators.

PROFESSOR SMITH.

(113.) SENIOR YEAR. Recitations, essays and lectures.

First Term.—Three times a week. Homer's Iliad, the first six books. Lectures on epic poetry.

Second Term.—Three times a week. Sophocles' *Oedipus Tyrannus.* Lectures on the Greek Drama.

Third Term.—Three times a week. Lucian's Timon. Lectures on Greek Etymology.

PROFESSOR SMITH.

The above courses are required of all candidates for the degree of Bachelor of Arts.

(114.) ANCIENT ART. Lectures.

First Term.—Twice a week. Lectures on the development of ancient architecture in Egypt, Assyria, Persia and Asia Minor.

Second Term.—Twice a week. Greek architecture and sculpture, illustrated from the monuments.

Third Term.—Twice a week. Roman architecture. The beginnings of mediævalism.

PROFESSOR SMITH.

This course is offered as an elective to seniors in the Arts course. The lectures are illustrated by charts and photographs, and full reference lists are provided for extended reading. The course will be given in 1891–92, and in alternate years thereafter.

LATIN LANGUAGE AND LITERATURE.

COURSES OF INSTRUCTION.

(115.) FRESHMAN YEAR. Recitations.

First Term.—Five times a week. Livy, book XXI, Chase's edition. Review of selected topics in Latin grammar. Re-translation. Roman history.

Second Term.—Five times a week. Horace, Odes and Epodes, Chase's edition. Prosody. Light reading. Roman History.

Third Term.—Five times a week. Cicero, Epistles. Light reading. Roman history.

PROFESSOR DERBY.

(116.) SOPHOMORE YEAR. Recitations and lectures.

First Term.—Five times a week. Tacitus, Histories. Horace, epistles. Roman history, literature or archæology.

Second Term.—Five times a week. Pliny's Letters, Cowan's edition. Plautus, *Captivi*, Lindsay's edition. Lucretius. Roman history, literature or archæology.

Third Term.—Five times a week. Juvenal and Persius, Chase's edition. Roman literature.

PROFESSOR DERBY.

The above courses are required of all candidates for the degree of Bachelor of Arts and for those candidates for the degree of Bachelor of Philosophy who take the Latin philosophical course.

(118.) SENIOR YEAR. Recitations, essays and lectures.

Latin is an elective study, three hours a week in the senior year of the courses in Arts and Philosophy. In 1891–92, the work in Latin will probably include:

(a.) A study of the political and institutional history of Rome, based upon Ihre, Mommsen, Seeley and Morey.

(b.) The reading of selected specimens of early Latin, followed by a study of one or more of the comedies of Plautus.

(c.) The study of the origin and development of the Latin language, or Latin composition.

 PROFESSOR DERBY.

In order to secure variety of reading matter in the Latin department, the text-books used in the several classes are partially changed from year to year.

GERMAN LANGUAGE AND LITERATURE.

COURSES OF INSTRUCTION.

(119.) SCIENTIFIC READING. Twice a week through the year.

First Term.—E. Gerland, Licht and Wärme, finished. A. Pinner, Einführung in das Studium der Chemie; A. Wassmuth, Die Electrizitat und ihre Anwendungen.

Second Term.—O. Taschenberg, Die Verwandlungen der Thiere. Selections from Wiedemann, Electrizitat, etc.

Third Term.—Selections from scientific periodicals.

PROFESSOR EGGERS.

(120.) GERMAN. Freshman. B. A. and B. Ph. Five times a week through the year.

First Term.—Brandt's German Grammar; Lodeman's Exercises; Andersen's Bilderbuch ohne Bilder.

Second Term.—Grammar—continued. Paul Heise, Drei Novellen.

Third Term.—Grammar—continued. Freitag, Aus dem Staate Friedrich's des Grossen.

PROFESSOR EGGERS.

The aim of the instruction in this year is to give to the student a thorough knowledge of the principles of German grammar, and a fair reading knowledge in preparation for a more systematic reading of a history of German literature.

(121.) GERMAN. Sophomore. B. A. and B. Ph. Three times a week through the year.

Brandt's Grammar, finished; Kluge, Geschichte der Deutschen National Literatur. Kluge, Answahl Deutcher Gedichte. Lectures and recitations.

PROFESSOR EGGERS.

(122.) GERMAN. Junior. B. A. and B. Ph. Three times a week through the year.

First Term.—Der junge Goethe—Goethe's Youth, and his Storm and Stress Period. Die Laun des Verliebten, die Mitschuldigen; Goetz von Berlichingen; Werther's Leiden.

Second Term.—Faust I. and part of II.

Third Term.—Der Schwäbische Dichterbund, with special attention to Uhland. Seminary work.

PROFESSOR EGGERS.

(123.) GERMAN LITERATURE. Lectures. Three times a week through the yea

A series of lectures on German Literature in German, the study of a M. H. German Grammar and the reading of one of the mediæval epics, and in the last term an additional course of lectures upon the development of the German language. The students will be required to write a German composition every month. The instruction in this course is to be carried on as far as practicable in German. Special work will be laid out for students who propose to teach German.

PROFESSOR EGGERS.

The university library contains a large number of illustrated works, such as Könneke, Bilderatlas; Hirth, Kulturgeschichtliches Bilderbuch; Stacke, Deutsche Geschichte; Henne am Rhym, Kulturgeschichte; König, Deutsche Literaturgeschichte, etc., which are of great assistance in the study of literature. The library, in addition, has been supplied, mainly through generous private donations, with a large number of books of reference, and with an abundance of material for seminary work.

FRENCH LANGUAGE AND LITERATURE.

According to the following courses as at present arranged, the instruction in French during the first year's study is substantially the same for all students, both Latin and non-Latin students being taught together in the same class. This arrangement is as yet necessitated by the exigencies of the schedule. The first year's instruction includes a rapid introduction to the morphology of the language, followed by extensive reading of ordinary French prose. In the second year students are divided on the basis of those who have had a Latin preparation and those who have not. For the former, the work, while in the main literary, also seeks to emphasize the linguistic features of the study, and to help the student to an acquaintance with the spoken language. For the latter, attention is directed chiefly to an introduction to the scientific vocabulary of the language. In the third year's course special phases of literature are studied, the study of the language historically is continued, and a more thorough acquaintance with the spoken language is aimed at. For the courses in Italian and Spanish, ability to read these languages is the main object sought. Their general relation to the Latin and French is continually emphasized.

COURSES OF INSTRUCTION.

(124.) FRESHMAN FRENCH. Recitations. Written exercises. Oral practice.

First Term.—Five times a week. Whitney's "Practical French Grammar" and Super's "Preparatory French Reader."

Second Term.—Five times a week. Grammar (Pt. I) and Reader finished. Crane's "Tableaux de la Révolution Française."

Third Term.—Five times a week. Crane's "Tableaux" continued. Sandeau, "Mademoiselle de la Seiglière."

Course I is taken by students in the Freshman year of all courses requiring French, with the exception of the course in Agriculture where it is taken in the junior year. In the Arts course it is taken as an elective in the junior year.

ASSOCIATE PROFESSOR BOWEN.

(125.) SOPHOMORE FRENCH, B. PH. COURSE. Recitations and lectures. Prose composition. Conversational practice. Lectures on the literature of the seventeenth century in France; comparison of the classic and of the romantic drama; versification.

First Term.—Twice a week. Fontaine's "Historiettes Modernes," Tome II. Once a week. Whitney's "French Grammar," Pt. II.

Second Term.—Twice a week. Corneille's "Horace;" "Le Cid" (as private reading). Once a week. Whitney's Grammar, Pt. II.

Third Term.—Three times a week. Victor Hugo, "Hernani." Private reading. Exercises in conversation.

ASSOCIATE PROFESSOR BOWEN.

(126.) SOPHOMORE FRENCH, B. SC. COURSE. Recitations.

First Term.—Twice a week. Luquiens' "French Prose of Popular Science and Descriptive Literature."

Second Term.—Twice a week. Same.

Third Term.—Twice a week. Same.

ASSOCIATE PROFESSOR BOWEN.

(127.) JUNIOR FRENCH. Recitations and Lectures. Prose composition. Special study of Idioms. Conversational practice. Dictation.

Lectures on the history of French Comedy; History of the French Language; Principles underlying sign and sound change in French.

First Term.—Twice a week. Gautier, "Scenes of Travel." Daudet, "Contes." Private reading; Gautier, About. Once a week. Chardenal's "French Exercises," Pt. II.

Second Term.—Three times a week. Moliere, "Le Misanthrope," "Les Femmes Savantes;" Beaumarchais, "Le Barbier de Séville." Private reading: Molière, "Le Médicin malgrè lui," "Les Précieuses Ridicules."

Third Term.—Twice a week. Clèdat's "Morceaux choisis des auteurs français du moyen âge."

Once a week. Blouet's "Class Book of French Composition."

Course (127) is open as an elective to students in the Junior year of the B. Ph. course A, and is required of students in the Junior year of the B. Ph. course B.

ASSOCIATE PROFESSOR BOWEN.

(128.) ITALIAN. Grammar and Reading.

First Term.—Twice a week. Grandgent's "Italian Grammar" and Harper's Italian Principia."

Second Term.—Twice a week. Goldoni, "Commedie Scelte."

Third Term.—Twice a week. Dante, "Inferno."

Course (128) is open as an elective to all students in the senior year of the B. Ph. course A, and to those students in the senior year of the B. A. course who have had one year of French. It is required in the senior (or junior) year of the B. Ph. course B.

Associate PROFESSOR BOWEN.

(129.) SPANISH. Grammar and Reading.

First Term.—Twice a week. Knapp's "Spanish Grammar" and Spanish Readings."

Second Term.—Twice a week. Knapp's "Readings." Calderon, "La Vida es sueño."

Third Term.—Twice a week. Cervantes, "Don Quijote."

Course (129) will alternate with course (128), and is open on the same conditions to students of the B. Ph. course A, and the B. A. course. It is required in the senior (or junior) year of the B. Ph. course B.

Associate PROFESSOR BOWEN.

EQUIPMENT.

The facilities provided under this heading include the most necessary reference books in the way of dictionaries and histories of literature as well as many of the most prominent works of the literature itself. The French department of the university library is provided with the dictionaries of Littré, Scheler, Brachet, etc. The critical works of Faguet, Stapfer, Pelissier and others are at the disposition of the student as an adjunct to the more general histories of literature. An attempt is being made to better the facilities for and the aids to advanced literary and linguistic work on the part of the student, and it is hoped that before long the equipment of the department may be full and satisfactory.

Organization.

The collegiate work of the university is divided into six schools, as follows: The School of Agriculture consists of those departments represented in the cousre leading to the degree of Bachelor of Agriculture, and in the Short Course in Agriculture.

The School of Engineering consists of those departments represented in the courses leading to the degrees of Civil Engineer, Mechanical Engineer, Engineer of Mines, and the Short Course in Mining.

The School of Pharmacy consists of those departments represented in the course leading to the degree of Graduate in Pharmacy.

The School of Veterinary Science consists of the departments represented in the course leading to the degree of Doctor of Veterinary Medicine.

The School of Science consists of those departments represented in the course leading to the degree of Bachelor of Science.

The School of Arts and Philosophy consists of those departments represented in the courses leading to the degrees of Bachelor of Arts and Bachelor of Philosophy.

Each school is under the direction of a standing committee of the faculty, having power to act in all matters pertaining to the studies of students in each school, in the transfer of students from one school to another, and in matters of minor discipline.

Classification of Students.

Every undergraduate student enters one of the above schools. In case of irregularity he is assigned to that one in which the majority of his studies are found. Collegiate students are classified as follows: 1. Graduates; 2. Regular Undergraduates; 3. Special Undergraduates.

Graduate students are graduates of this or other approved colleges or universities who are pursuing studies in advance of those represented by their respective degrees as here conferred.

Regular undergraduates are the members of the four college classes and regular students in the shorter courses.

Special undergraduates are students who have attained college rank, and have been admitted to pursue special lines of work. But all students pursuing such special work, who are more than fifteen hours in arrears of regular Freshman work will be considered and classed in the Preparatory Department.

THE SCHOOL OF AGRICULTURE.

STANDING COMMITTEE.

President SCOTT, Professor LAZENBY, *Secretary*; Professors TOWNSHEND, ROBINSON, LORD, WEBER, DETMERS, and KELLICOTT.

This school embraces two courses; 1st, the course leading to the degree of Bachelor of Agriculture; 2d, the Short Course in Agriculture, intended for those students, who can spend but one or two years at the university.

The aim of the school is to give to young men a general education, and to fit them specially first, for the pursuit of agriculture and horticulture in a rational manner; second, to fill positions as agriculturists, horticulturists, botanists and agricultural chemists.

ADMISSION.

Candidates for admission to the Short Course in Agriculture will be examined in orthography, writing, grammar, geography and arithmetic. High school diplomas and teachers' certificates for a year will be accepted in lieu of the examination of the subjects, which they include. Candidates over twenty-one years of age are admitted to the Short Course in Agriculture without examination. All candidates who have passed a satisfactory examination in the branches mentioned above, and who desire to change from the short course to the long course can do so by substituting algebra for agriculture in the third term of the second year, which will thus become the Freshmen year of the long course.

DEPARTMENTS AND EQUIPMENT.

1. **Department of Agriculture.**—This department is well equipped for the practical illustration of the various branches taught. A farm of about 300 acres, now in charge of the Experiment Station, is at all times available to students of this department as a means of practical instruction. There is also a large collection of models, soils, seeds and other specimens used for illustration in class room work.

2. **Department of Agricultural Chemistry.**—In this department the instruction combines theory and practice, students entering the laboratory after the first four weeks of the fall term of the short course. To facilitate this plan of instruction a well equipped laboratory has been provided with desks for 54 students.

3. **Department of Botany and Horticulture.**—For this department a special building, horticultural hall, with a green house and propagating houses attached, has been provided. The class room is well supplied with microscopes and accessories for use by students. A large museum, herbarium and the gardens of the Experiment Station are also available for class illustration and practical instruction.

4. **Department of Zoology and Comparative Anatomy.**—This department is one of the oldest and best equipped departments of the University. The laboratory is well supplied with desks, microscopes, microtomes and other accessories for the use of

students in the practical study of histology and microscopy. Collections of models, skeletons and anatomical specimens have also been made for class illustration.

COURSE IN AGRICULTURE.

FOR THE DEGREE OF BACHELOR OF AGRICULTURE.

FRESHMAN YEAR.

The same as the second year of the Short Course, below, except that algebra five hours a week is substituted for agriculture.

SOPHOMORE YEAR.

NOTE.—For full information concerning the work in any subject refer to the given bracketed number, pages 39 to 68. Unbracketed numbers designate number of hours per week; (*p*) refers to classes in the Preparatory Department.

First term.		Second term.		Third term.	
Agricultural Chemistry,	5 (5).	Botany,	5 (8).	Agricultural Chemistry,	5 (5).
Botany,	5 (8).	Geometry,	5 (*p*).	English,	5 (*p*).
Algebra,	5 (*p*).	History,	5 (*p*).	Plane Trignometry,	5 (*p*)

JUNIOR YEAR.

First term.		Second term.		Third term.	
Veterinary Anatomy,	3 (23*a*).	Veterinary Anatomy,	5 (23*a*).	Agricultural Chemistry,	3 (5).
Horticulture,	4 (11).	Horticulture,	2 (11).	Horticulture,	4 (11).
Zoology,	3 (15).	Zoology,	3 (15).	Entomology,	3 (15).
French,	5 (124).	French,	5 (124).	French,	5 (124).
or		or		or	
German,	5 (*p*).	German,	5 (*p*).	German,	5 (*p*).
English,	2 (104).	English,	2 (104).	English,	2 (104).

SENIOR YEAR.

First term.		Second term.	Third term.
Agriculture,	2	The studies of the first term continued.	The studies of the second term continued, except that special botany (8) is substituted for Geology, and Ethics (94) for Psychology.
Veterinary Science,	5 (19).		
Constitutional History,	2 (97).		
Elective, five hours a week.			
Physics,	5 (50).		
Geology,	5 (89).		
Psychology,	3 (93).		
German,	3 (121).		
French,	3 (125).		
Polit'al Economy,	2 (101).		

THE SHORT COURSE IN AGRICULTURE.

FIRST YEAR.

First term.			Second term.			Third term.		
Agricultural Chemistry,	5	(4).	Agricultural Chemistry,	5	(4).	Agricultural Chemistry,	5	(4).
Physical Geography,	5	(*p*).	Physics,	5	(*p*).	Physics,	5	(*p*).
Geometry,	5	(*p*).	Mechanical laboratory,	3	(25).	Botany,	5	(6).
			Field Measurements,	3	(61).			

SECOND YEAR.

First term.			Second term.			Third term.		
Agriculture,	3	(1).	Agriculture,	3	(1).	Stock Breeding,	4	(2).
Domestic Animals,	4	(2).	Stock Feeding,	4	(2).	Special Pathology,	3	(3).
General Pathology,	3	(3).	Materia Medica,	3	(3).	Horticulture,	5	(10).
Horticulture,	5	(10).	Physiology,	5	(13).	Agriculture,	4	(1).

THE SCHOOL OF VETERINARY MEDICINE.

STANDING COMMITTEE:

President SCOTT; Professor DETMERS, *Secretary*; Professors TOWNSHEND, LAZENBY, WEBER, KELLICOTT, AND KAUFFMAN.

COURSE IN VETERINARY MEDICINE.

FOR THE DEGREE OF DOCTOR OF VETERINARY MEDICINE.

FIRST YEAR.

First term.			Second term.			Third term.		
Veterinary Anatomy,	3	(23*a*).	Veterinary Anatomy,	5	(23*a*).	Veterinary Anatomy,	3	(23*a*).
Histological Laboratory,	5	(16).	Histological Laboratory,	5	(16).	Physiology,	3	(12).
Physiology,	5	(12).	Physiology,	3	(12).	Agricultural Chemistry,	5	(4).
Agricultural Chemistry,	5	(4).	Agricultural Chemistry,	5	(4).	Botany,	5	(6)

SECOND YEAR.

First term.		Second term.		Third term.	
General Pathology & Therapeutics,	5 (3).	Anatomical Laboratory,	2 (23*b*).	Special Pathology and Therapeutics,	4 (3).
Domestic Animals,	4 (2).	Medical Botany,	2 (7*a*).	Stock Breeding,	4 (2).
				Histological Laboratory.	5 (16).
Pharmacy,	3 (81).	Pharmacy,	5 (81).	Pharmacy,	5 (81).
Economic Botany,	4 (8).	Materia Medica,	5 (3).		
Clinic daily,	(24).	Clinic daily,	(24).	Clinic daily,	(24).

THIRD YEAR.

First term.		Second term.		Third term.	
Infectious and Contagious Diseases,	5 (19).	Infectious and Contagious Diseases and Forensic Veterinary Medicine,	5 (19).	Toxicology and Principles of Horseshoeing,	5 (19).
Surgical Diseases and Operations,	5 (20).	Surgical Diseases and Operations,	5 (20).	Veterinary Obstetrics,	5 (21).
Clinical Practice.	5 (24).	Clinical Practice,	5 (24).	Clinical Practice,	5 (24).
				Bacteriology,	1 (23).

THE SCHOOL OF ENGINEERING.

STANDING COMMITTEE:

President SCOTT; Professor BROWN, *Secretary;* Professors ROBINSON, LORD, THOMAS, BOHANNAN, AND EGGERS.

This school comprises the departments represented in the courses of Mechanical, Civil, Electrical, and Mining Engineering, and the Short Course in Mining.

COURSE IN MECHANICAL ENGINEERING.

FOR THE DEGREE OF MECHANICAL ENGINEER.

This course has for its first object the qualifying of men for the mechanical engineering profession. It aims to embrace preparation for such lines of pursuit as the successful management of machinery in manufacturing establishments; the superintendence of construction; the designing and laying out of machinery plants of mills and factories; the invention of machines for particular purposes, and the designing and drawing of the same, or of the inventions of others, preparatory to construction; the making of calculations or exercising sound judgment respecting strength, shocks, proportion, endurance and suitability of material for specific purposes, as steel in temper, composition metals, woods, etc

FRESHMAN YEAR.

NOTE: For full information concerning the work in any subject refer to the given bracketed number, pages 39 to 68. Unbracketed numbers mean hours per week.

First term.		Second term.		Third term.	
Mathematics,	3 (35).	Mathematics,	3 (35).	Mathematics,	3 (35).
Chemistry,	4 (84).	Chemistry,	2 (84).	Chemistry,	4 (85).
Drawing,	2 (76).	Physiology,	5 (13).	Lettering,	2 (78).
French,	5 (124).	French,	5 (124).	French,	5 (124).
English "A,"	2 (104).	English "A,"	2 (104).	English "A,"	2 (104).

SOPHOMORE YEAR.

First term.		Second term.		Third term.	
Mathematics,	5 (36).	Mathematics,	5 (36).	Mathematics,	5 (36).
Mechanical Laboratory,	3 (25).	Mechanical Laboratory,	3 (25).	Mechanical Laboratory,	3 (25).
Projection Drawing,	3 (79).	Drawing,	3 (79).	Drawing,	3 (79).
Physics,	3 (42).	Physics,	3 (42).	Physics,	3 (42).
French,	2 (126).	French,	2 (126).	French,	2 (126).
Rhetoricals,	(108).	Rhetoricals,	(108).	Rhetoricals,	(108).

JUNIOR YEAR.

First term.		Second term.		Third term.	
Mechanics,	5 (29).	Mechanics,	5 (29).	Technical Drawing,	5 (34a).
Mechanism,	2 (27).	Mechanism,	5 (27).	Mechanism,	2 (26).
Designing and Drawing,	5 (28).	Geology,	5 (91).	Astronomy and Geodesy,	3 (38
Astronomy and Geodesy,	3 (38).			Strength of Materials,	5 (30).
Rhetoricals,	(109).	Rhetoricals,	(109).	Rhetoricals,	(109).

SENIOR YEAR.

First term.		Second term.		Third term.	
Thermodynamics,	5 (31).	Prime movers,	5 (32).	Mill work,	5 (33).
Metallurgy,	5 (62).	Metallurgy,	5 (62).	Technical drawing,	5 (34).
	5 (50).	Physics,	5 (50).	Physics,	5 (50).

During the Senior year two hours a week are devoted to Projet work.

THE COURSE IN ELECTRICAL ENGINEERING.

FOR THE DEGREE OF MECHANICAL ENGINEER.

The object of this course is to prepare students for the various pursuits in which the applications of electricity are prominent. Physics, especially theoretical and applied electricity, and mechanical engineering are naturally the leading subjects of the course. General theory is treated in ample breath, and is tested by experiments in well-equipped laboratories. The laboratories are so conducted as to afford the student a degree of facility in the use of instruments and machinery, only acquired by continued practice.

FRESHMAN YEAR.

First term.			Second term.			Third term.		
Mathematics,	3	(35).	Mathematics,	3	(35).	Mathematics,	3	(35).
Chemistry,	4	(84).	Chemistry,	2	(84).	Mechanical Laboratory,	2	(25).
Mechanical Laboratory,	2	(25).	Mechanical Laboratory,	2	(25).	Drawing,	1	(76).
French,	5	(124).	Drawing,	1	(76).	Lettering,	2	(78).
			French,	5	(124).	French,	5	(124).
English "A,"	2	(104).	English "A,"	2	(104).	English "A,"	2	(104).

SOPHOMORE YEAR.

First term.			Second term.			Third term.		
Mathematics,	5	(36).	Mathematics,	5	(36).	Mathematics,	5,	(36).
Physics,	3	(42).	Physics,	3	(42).	Physics,	3,	(42).
Physics,	2	(43).	Physics,	2	(43).	Physics,	2,	(43).
Physical Laboratory,	2	(48).	Physical Laboratory,	3	(48).	Mechanical Laboratory,	3,	(25).
Mechanical Laboratory,	2	(25).	Drawing,	3	(79).	Drawing,	3,	(79).
Projection Drawing,	3	(79).						
Rhetoricals,		(108).	Rhetoricals,		(108).	Rhetoricals,		(108.)

JUNIOR YEAR.

First term.			Second term.			Third term.		
Physics,	3	(44).	Physics,	5	(49).	Physics,	3	(49).
Mechanics,	5	(29).				Mechanism,	2	(26).
Mechanism,	2	(27).	Mechanics,	5	(29).	Strength of materials,	5	(30).
			Mechanism,	5	(27).	Technical Drawing,	5	(34a).
Designing and Drawing,	5	(28).						
Least Squares,	1	(37).						
Rhetoricals,		(109).	Rhetoricals,		(109).	Rhetoricals,		(109).

SENIOR YEAR.

First term.			Second Term.			Third term.		
Electrical Engineering,	3	(46).	Electrical Engineering,	5	(46).	Electrical Engineering,	3	(46).
Same,	2	(45).						
Electrical Laboratory,	3	(52).	Electrical Laboratory.	3	(52).	Electrical Laboratory,	3	(52).
Thermodynamics,	5	(31).	Prime Movers.	5	(32).	Millwork,	5	(33).
Technical Drawing,	3	(47).	Technical Drawing,	3	(47).	Technical Drawing,	5	(47).

THE COURSE IN CIVIL ENGINEERING.

FOR THE DEGREE OF CIVIL ENGINEER.

FRESHMAN YEAR.

First term.			Second term.			Third term.		
Mathematics,	3	(35).	Mathematics,	3	(35).	Mathematics,	3	(35).
Chemistry,	4	(84).	Chemistry,	2	(84).	Chemistry,	4	(85).
Drawing,	2	(76).	Physiology,	5	(13).	Lettering,	2	(78).
French,	5	(124).	French,	5	(124).	French,	5	(124).
English "A,"	2	(104).	English "A,"	2	(104).	English "A,"	2	(104).

SOPHOMORE YEAR.

First term.			Second term.			Third term.		
Mathematics,	5	(36).	Mathematics,	5	(36).	Mathematics,	5	(36).
Land Surveying,	4	(53).	Drawing,	3	(79).	R. R. Surveying,	4	(54).
Projection drawing,	3	(79).	Physics,	3	(42).	Drawing,	3	(79).
Physics,	3	(42).	Mineralogy,	3	(65).	Physics,	3	(42).
French,	2	(126).	French,	2	(126).	French,	2	(126).
Rhetoricals,		(108).	Rhetoricals,		(108).	Rhetoricals,		(108).

JUNIOR YEAR.

First term.			Second term.			Third term.		
Surveying,	3	(55).	Drawing,	3	(56).	Drawing,	3	(58).
Astronomy and Geodesy,	3	(38).	Astronomy and Geodesy,	3	(39).	Photography,	2	
Mechanics,	5	(29).	Mechanics,	5	(29).	Bridge Strains,	5	(57).
						Strength of Materials,	5	(30).
Geology,	5	(89).	Geology,	5	(89).	Astronomy and Geodesy,	3	(38).
Rhetoricals,		(109).	Rhetoricals,		(109).	Rhetoricals,		(109).

SENIOR YEAR.

First term.			Second term.			Third term.		
Civil Engineering,	5	(59).	Civil Engineering,	5	(59).	Sanitary Engineering,	5	(591).
Plans and Specifications,	5	(60).	Economic Geology,	5	(90).	Plans and Specifications,	5	(60).
Physics,	5	(50).	Physics,	5	(50).	Physics,	5	(50).

During the Senior year two hours per week are devoted to Projet work.

COURSE IN MINING ENGINEERING.

FOR THE DEGREE OF ENGINEER OF MINES.

This course is arranged for students intending to become mining engineers and surveyors, metallurgical or technical chemists. The plan of work, therefore, while keeping

mathematics, drawing and engineering prominent, also provides extended work in applied chemistry, chemical analysis, assaying, mineralogy and geology, surveying with especial application to mines and underground work and the treatment of ores, both mechanical in "ore dressing" and chemical in metallurgy, form important features.

There is added a "short course in mining" not leading to a degree, and intended for students lacking time and preparation for the long course. The work is more elementary in character and is made especially to apply to coal mining. The terms of admission to the long course are the same as the general requirement for entrance to the college. Students are admitted to the short course if over 21 years of age, without examination provided they have had some practical experience as miners, for whom the course was principally designed.

FRESHMAN YEAR.

NOTE.—For full information concerning the work in any subject, refer to the given bracketed number, pages 39 to 68. Unbracketed numbers designate hours per week. (p) refers to classes in the preparatory department.

First term.		Second term.		Third term.	
Mathematics,	3 (35).	Mathematics,	3 (35).	Mathematics,	3 (35).
Chemistry,	4 (84).	Chemistry,	2 (84).	Chemistry,	4 (85).
Drawing,	2 (76).	Physiology,	5 (13).	Lettering,	2 (78).
French,	5 (124).	French,	5 (124).	French,	5 (124).
English "A,"	2 (104).	English "A,"	3 (104).	English "A,"	2 (104).

SOPHOMORE YEAR.

First term.		Second term.		Third term.	
Chemistry,	5 (86).	Chemistry,	5 (86).	Chemistry,	5 (86).
Mathematics,	5 (36).	Mathematics,	5 (36).	Mineralogy,	3 (66).
Physics,	3 (42).	Physics,	3 (42).	Mathematics,	5 (36).
Projection Drawing,	3 (79).	Drawing,	3 (79).	Physics,	3 (42).
Rhetoricals,	(108).	Rhetoricals,	(108).	Rhetoricals,	(108).

JUNIOR YEAR.

First term.		Second term.		Third term.	
Metallurgy,	5 (62).	Metallurgy,	5 (62).	Mine surveying,	5 (71).
Metallurgical Laboratory,	5 (63).	Metallurgical Laboratory,	5 (63).	Metallurgical Laboratory,	5 (63).
Mechanics,	5 (29).	Determinative Mineralogy,	5 (67).	Strength of Materials,	5 (30).
Rhetoricals,	(109).	Rhetoricals,	(109).	Rhetoricals,	(109).

SENIOR YEAR.

First term.		Second term.		Third term.	
Mining Engineering,	5 (70).	Mining Engineering,	5 (70).	Mining Engineering,	5 (70).
Assaying,	5 (64).	Geology,	5 (58).	Ore Dressing,	5 (68).
Geology,	5 (58).	Economic Geology,	5 (59).	Bridge Strains,	5 (57).

During the Senior year two hours a week are devoted to Projet work.

SHORT MINING COURSE.

FIRST YEAR.

First term.			Second term.			Third term.		
Algebra,	5	(75).	Algebra,	5	(75).	Algebra,	5	(75).
Geometry,	5	(p).	Geometry,	5	(p).	Trigonometry,	5	(p).
Physical Geography,	2	(p).	Physics,	5	(p).	Physics,	5	(p).

SECOND YEAR.

First term.			Second term.			Third term.		
Mine Surveying,	5	(72).	Ventilation and Haulage,	5	(73).	Mine Operating,	5	(74).
Mineral Chemistry,	5	(69).	Mineral Chemistry,	2	(69).	Mineral Chemistry,	5	(69).
Drawing,	3	(79).	Elementary Geology,	5	(91).	Mechanical Laboratory,	3	(25).
Free hand Drawing,	2,	(76).	Drawing,	3	(79).	Lettering,	2	(78).

THE SCHOOL OF PHARMACY.

STANDING COMMITTEE.

President SCOTT; Professor KAUFFMAN, *Secretary;* Professors NORTON, TOWNSHEND, LAZENBY AND KELLICOTT.

The School of Pharmacy comprises those departments represented in the course leading to the degree of Graduate in Pharmacy. Its aim is to impart that general and special knowledge which is necessary to the attainment of a high standing in the profession of the pharmacist. The graduates of this course are fully prepared to pass the State examination required by law for the practice of pharmacy in this and other States.

COURSE FOR THE DEGREE OF GRADUATE IN PHARMACY.

FIRST YEAR.

First Term.			Second Term.			Third Term.		
Chemistry,	4	(84).	Chemistry,	2	(84).	Chemistry,	4	(85).
Physical Geography,	5	(*p*).	Mineralogy,	3	(65).	Botany,	5	(6).
Latin,	5	(*p*).	Physics,	5	(5).	Physics,	5	(*p*).
			Latin,	5	(*p*).			

SECOND YEAR.

First Term.			Second Term.			Third Term.		
Pharmacy,	3	(81).	Pharmacy,	5	(81).	Pharmacy,	5	(82).
Chemistry,	5	(86).	Chemistry,	5	(86).	Chemistry,	5	(86).
Botany,	5	(8).	Botany,	2	(7*a*).	Physiology,	3	(12).
Physiology,	3	(12).	Physiology,	3	(12).	Microscopy,	2	(18).

THIRD YEAR.

First Term.			Second Term.			Third Term.		
Pharmacy,	5	(83).	Pharmacy,	3	(83).	Pharmacy,	5	(83).
Chemistry,	5	(87).	Materia Medica,	3	(3).	Materia Medica,	3	(3).
General Pathology,	3	(3).	Chemistry,	5	(87).	Chemistry,	5	(87).
			Proximate Organic Analysis	3	(87*a*).	Toxicology,	2	(87*a*).

THE SCHOOL OF SCIENCE.

STANDING COMMITTEE:

President SCOTT; Professor BOHANNAN, *Secretary;* Professors ORTON, THOMAS, KELLICOTT, and EGGERS.

The following special arrangement has been made respecting the Degree in Science:

Each student pursuing the course leading to the degree of Bachelor of Science is required not later than the beginning of the Junior year, to elect as a major study, Mathematics or one of the sciences in which laboratory instruction is offered as a part of the elective work; and such major study shall be pursued until the end of the course, under the direction of the professor in charge of the deparment in which the chosen work may lie. The entire amount of time assigned to elective work in either the Junior or the Senior year, or both, may, with the approval of the professor in charge, be applied on the major study elected; but in no case shall this degree be conferred upon any student who has not spent on his major study at least five hours per week, or its equivalent, for two consecutive years. The remaining hours of elective work may be employed upon any work in the University on which he is prepared to enter.

Two hours per week shall be added to the time allotted to the work of the Senior year, for the preparation of a thesis. At the beginning of the Senior year, each student in this course shall take up as thesis work some special line of inquiry within the field of his major study, subject to the approval of the professor in charge of the department and shall devote to it the time above assigned, or its equivalent, independently of his other work. Not later than the beginning of the second term of the Senior year he shall submit to the professor in charge for his approval, some question or topic arising out of or connected with the line of work chosen at the beginning of the year. Upon its approval he shall commence an original and independent research upon the same, the manner and methods to be chosen or devised by himself, and shall present the results of his investigations and his conclusions thereupon, in a thesis to be submitted to the professor in charge not later than June first preceding the commencement at which the degree is sought; and the acceptance and approval of the thesis in question by the professor

shall be an essential condition of graduation. Where two or more students are pursuing the same major study a joint research and investigation may be made with the consent f the professor in charge of the department.

FOR THE DEGREE OF BACHELOR OF SCIENCE.

FRESHMAN YEAR.

NOTE—Unbracketed numbers designate hours per week. (p) refers to classes in Preparatory Department. For full information concerning the work in any subject refer to the given bracketed numbers, pages 39 to 68.

REQUIRED.

First term.		Second term.		Third term.	
Chemistry,	4 (84).	Chemistry,	2 (84).	Chemistry,	4 (85).
Mathematics,	3 (35).	Mineralogy,	3 (65).	Mathematics,	3 (35).
Botany,	2 (7).	Mathematics,	3 (35).	Botany,	2 (7).
French,	5 (124).	Botany,	2 (7).	French,	5 (124).
		French,	5 (124).	or	
German,	5 (*p*).	or		German,	5 (*p*).
English,	2 (104).	German,	5 (*p*).	English,	2 (104).
		English,	2 (104).		

*Students who enter as Freshmen from schools other than the Preparatory department, with Latin as their preparatory language, will take German in the Freshman and Sophomore years; other students will take French.

SOPHOMORE YEAR.

REQUIRED.

First term.		Second term.		Third term.	
Physics,	3 (42).	Physics,	3 (42).	Physics,	3 (42).
Physiology,	3 (12).	Physiology,	3 (12).	Physiology,	3 (12).
French,	2 (126).	French,	2 (126).	French,	2 (126).
or		or		or	
German,	5 (*p*).	German,	5 (*p*).	German,	(*p*).
Freehand Drawing	1 (77).	Freehand Drawing,	1 (77).	Freehand Drawing,	1 (77).
Rhetoricals,	(108).	Rhetoricals,	(108).	Rhetoricals,	(108).

ELECTIVE.

(1) Seven hours a week through the year, chosen from the following studies:

Chemistry, 5 (86); Botany, 5 (8); Comp. Anatomy, 3 (17); Mathematics, 5 (36); English, 2 (105); Const. Hist. of U. S., 2 (97); German,* 2 (119); Med. and Mod. Hist., 2 (97*a*).

(1) For students of whom five hours in German is required, the minimum of elective studies in this year is four hours instead of seven.

*Open to students who have had two years of German.

JUNIOR YEAR.

First term.		Second term.		Third term.	
Psychology,	3 (93).	Psychology,	3 (93).	Ethics,	3 (94).
Political Economy,	2 (101).	Political Economy,	2 (101).	Political Economy,	2 (101).
Rhetoricals,	(109).	Rhetoricals,	(109).	Rhetoricals,	(109).

ELECTIVE.

Ten hours a week, of which at least five shall be in mathematics or science, the subject chosen to be continued to the end of the course; the science to be one in which laboratory instruction is given. The other five hours may be chosen from any course taught in the University.

SENIOR YEAR.

REQUIRED.

First term.	Second term.	Third term.
Geology, 5, (89).	Geology, 5 (89).	Astronomy, 5 (41).
Thesis.	Thesis.	Thesis.

ELECTIVE.

Ten hours a week as in the Junior year. Also Senior mathematics, 5 (40*a*).

THE SCHOOL OF ARTS AND PHILOSOPHY.

This school includes the three courses leading to the degrees of Bachelor of Arts and Bachelor of Philosophy. It is under the control of a standing committee of the Faculty, known as the committee on Arts and Philosophy. Of this committee, Associate Professor Bowen is secretary. The other members are President Scott, (chairman *ex-officio*), Professors Orton, Norton, Derby, Smith, Knight, Associate Professor Chalmers.

THE COURSE IN ARTS.

The course leading to the degree of Bachelor of Arts, forms one of the general courses of study and approximates as closely as may be to "academical" course of most one-course colleges. As the essential and distinguishing feature of this course, the study of Latin and Greek is retained; and a liberal share of the course is devoted to other literary and linguistic work.

A large liberty of elective work is, however, allowed in this, as in other courses, and the range of electives constantly widens from Freshman year to the close of the course. Besides the courses in classics, ancient and modern, which are required, General Chemistry is prescribed for every student in the course, throughout the whole of Freshman year, and advanced work in the chemical laboratory is open as an elective to Sophomores. Ample opportunity for advanced work in science is afforded by the electives in Physics, Comparative Anatomy, Botany, Zoology and Geology. Constitutional and Political History is required in the Junior year; and History is an elective in both Junior and Senior years.

Psychology and Ethics are required in the Junior year, and Logic and the History of Philosophy in the Senior year.

It will be seen by referring to the course of study that the course in Arts aims at a full, modern interpretation of the idea of a "liberal" education, and that in both its required and elective features the symmetrical mental development of the student is sought.

From all candidates for the Baccalaureate degree in Arts a thesis is required (see page 95), and for the preparation of this thesis two hours a week is set aside through the Senior year.

COURSE IN ARTS.

FOR THE DEGREE OF BACHELOR OF ARTS.

FRESHMAN YEAR.

NOTE: The numbers following a study indicate hours a week. For a description of any study see its bracketed number, pages 39 to 68.

First term.		Second term.		Third term.	
Latin,	5 (115).	Latin,	5 (115).	Latin,	5 (115).
Greek,	5 (110).	Greek,	5 (110).	Greek,	5 (110).
English,	2 (104).	English,	2 (104).	English,	2 (104).
Chemistry,	4 (84).	Chemistry,	2 (84).	Chemistry or	4 (85).
		Mineralogy or	3 (65).	Mathematics,	3 (35).
		Mathematics,	3 (35).		

SOPHOMORE YEAR.

REQUIRED.

First term.		Second term.		Third term.	
Latin,	5 (116).	Latin,	5 (116).	Latin,	5 (116).
Greek,	3 (111).	Greek,	3 (111).	Greek,	3 (111).
English,	2 (105).	English,	2 (105).	English,	2 (105).
Rhetoricals,	(108).	Rhetoricals,	(108).	Rhetoricals,	(108).

ELECTIVE.

(Six hours a week through the year chosen from the following studies:)

Chemistry, 5 (85); Physics, 3 (42); Botany, 2 (7); Physiology, 3 (12); Comparative Anatomy, 3 (17); History, 2 (97*a*); German 5 (*p*); Free-hand Drawing 1 (77).

JUNIOR YEAR.

REQUIRED.

First term.		Second term.		Third term.	
Greek,	3 (112).	Greek,	3 (112).	Greek,	3 (112).
Political Economy,	2 (100).	Political Economy,	2 (101).	Political Economy,	2 (101).
Psychology,	3 (93).	Psychology,	3 (93).	Ethics,	3 (94).
History,	2 (97).	History,	2 (97).	History,	2 (97).
Rhetoricals,	(109).	Rhetoricals,	(109).	Rhetoricals,	(109).

ELECTIVE.

(Five hours a week through the year chosen from the following studies:)

Chemistry, 5 (87); Physics, 5 (50); Botany, 5 (8); Botany, 2 (7); Physiology, 3 (12); Zoology, 3 (15); Histology, 5 (16); History B, 3 (99); History C, *2 (100); Inter-

national Law, 2 (102); German, 3 (121); French, 5 (124); English C, 2 (106); Latin, 3 (118).

* History, (100), must be preceded by History, (97).

SENIOR YEAR.

REQUIRED.

Nine hours a week through the year chosen from the following studies:

First term.		Second term.		Third term.	
Greek,	3 (113).	Greek,	3 (113).	Greek,	3 (113).
Logic,	3 (95).	Logic,	3 (95).	Hist. of Philosophy,	3 (96).
Thesis.		Thesis.		Thesis.	

ELECTIVE.

Chemistry, 5 (87); Physics, 5 (50 or 51); Botany 5, (8 or 9); Zoology, 3 (15); Histology, 5 (16); Geology, (1st and 2d terms), 5 (89); History A, 3 (98); History C,* 2 (100); International Law, 2 (102); Philosophy, 2 (96*a*); Ancient Art, 2 (114); German, 3 (122); French 3 (127); Spanish, 2 (129); or Italian, 2 (128); English C, 2 (106); English D, 2 (107). Astronomy, (3d term), 5 (41).

* History, (100), must be preceded by History, (97).

NOTE: The Senior class in 1891-92 are required to take Political Economy (101), with electives 7 hours.

FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

(Latin Course.)

FRESHMAN YEAR.

REQUIRED.

First term.		Second term.		Third term.	
Latin,	5 (115).	Latin,	5 (115).	Latin,	5 (115).
French,	5 (124).	French,	5 (124).	French,	5 (124).
English,	2 (104).	English,	2 (104).	English,	2 (104).
Chemistry,	4 (84).	Chemistry,	2 (84).	Chemistry, or	4 (85).
		Mineralogy, or	3 (65).	Mathematics,	3 (35).
		Mathematics,	3 (35).		

SOPHOMORE YEAR.

REQUIRED.

First term.		Second term.		Third term.	
Latin,	5 (116).	Latin,	5 (116).	Latin,	5 (116).
French,	3 (125).	French,	3 (125).	French,	3 (125).
English,	2 (105).	English,	2 (105).	English,	2 (105).
Rhetoricals,	(108).	Rhetoricals,	(108).	Rhetoricals,	(108).

ELECTIVE.

Six hours a week through the year chosen from the following studies:

Chemistry, 5 (85), Physics, 3 (42), Botany, 2 (7), Physiology, 2 (12), Comparative Anatomy, 3 (17), German, 5 (*p*), History, 2 (97*a*), Free-hand Drawing, 1 (77).

JUNIOR YEAR.

REQUIRED.

First term.		Second term.		Third term.	
History,	3 (98).	History,	3 (98).	History,	3 (98).
Psychology,	3 (93).	Psychology,	3 (93).	Ethics,	3 (94).
Const. History of the U. S.,	2 (97).	Const. History of the U. S.,	2 (97).	Const. History of the U. S.,	2 (97).
Political Economy,	2 (101).	Political Economy,	2 (101).	Political Economy,	2 (101).
Rhetoricals,	(109).	Rhetoricals,	(109).	Rhetoricals,	(109).

ELECTIVE.

Five hours a week, through the year, chosen from the following studies:

Chemistry, 5 (87), Physics, 5 (50), Botany, 5 (8), Botany, 2 (7), Physiology, 3 (12), Zoology, 3 (15), Histology, 5 (16), History, 2 (100[1]), International Law, 2 (102), German, 3 (121), French, 3 (127), English, C, 2 (106), Italian, 2 (128), Spanish, 2 (129), Latin, 3 (118), Italian, 2, (128) or Spanish, 2 (129[2]).

[1] History (100) must be preceded by History (97) (U. S. Const.)
[2] Italian and Spanish open to those who have had one year of French.

SENIOR YEAR.

REQUIRED.

First term.		Second term.		Third term.	
History,	3 (99).	History,	3 (99).	History,	2 (99).
Logic,	3 (95).	Logic,	3 (95).	History of Philosophy,	3 (96).
Thesis.		Thesis.		Thesis.	

ELECTIVE.

Nine hours a week, through the year, chosen from the following studies:

Chemistry, 5 (87), Physics, 5 (50 or 51), Botany, 5 (8 or 9), Zoology, 3 (15), Histology, 5 (16), Geology, 1st and 2d terms, 5 (89), Astronomy, 5 (41), History, C[1], 2 (100), International Law, 2 (102), Philosophy, 2 (96a), Ancient Art, 2 (114), German, 3 (122), English, 2 (106), English, 2 (107), Spanish, 2 (129) or Italian, 2 (128[2]).

[1] Preceded by History (97).
[2] Open to students who have had one year in French.
[*Note.* Political Economy 2 (101) is a required subject for seniors in 1891-'92, and the elective hours will be seven per week.]

OR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Modern Language Course.

FRESHMAN YEAR.

REQUIRED.

First term.		Second term.		Third term.	
French,	5 (124).	French,	5 (124).	French,	5 (124).
German,	5 (120).	German,	5 (120).	German,	5 (120).
English,	2 (104).	English,	2 (104).	English,	2 (104).
Chemistry,	4 (84).	Chemistry,	2 (84).	Chemistry or	4 (85).
		Mineralogy or	3 (65).	Mathematics,	3 (35).
		Mathematics,	3 (35).		

SOPHOMORE YEAR.

REQUIRED.

First term.		Second term.		Third term.	
French,	3 (125).	French,	3 (125).	French,	3 (125).
German,	3 (121).	German,	3 (121).	German,	3 (121).
English,	2 (105).	English,	2 (105).	English,	2 (105).
Rhetoricals,	(108).	Rhetoricals,	(108).	Rhetoricals	(108).

ELECTIVE.

Eight hours a week, through the year, chosen from the following studies:

Chemistry, 5 (85), Physics, 3 (42), Botany, 2 (7), Physiology, 3 (12), Comp. Anatomy, 3 (17), History, 2 (97*a*), Free-hand Drawing, 1 (77), Mediaeval and Modern History, 2 (97*a*).

JUNIOR YEAR.

REQUIRED.

First term.		Second term.		Third term.	
French,	3 (127).	French,	3 (127).	French,	
German,	3 (122).	German,	3 (122).	German,	(122).
Psychology,	3 (93).	Psychology,	3 (93).	Ethics,	(94).
History,	2 (97).	History,	2 (97).	History,	2 (97).
Rhetoricals,	(109).	Rhetoricals,	(109).	Rhetoricals,	109).

ELECTIVE.

Five hours a week through the year, chosen from the following studies:

Chemistry 5 (87), Physics 5 (50), Botany 5 (8), Botany 2 (7), Physiology 3 (12), Zoology 3 (15), Histology 5 (16), History B, 3 (99), History C, 2* (100), International Law 2 (102), English C, 2 (106), Italian 2 (128), or Spanish 2 (129).

*History (100) must be preceded by History (97.)

SENIOR YEAR.

REQUIRED.

First term.		Second term.		Third term.	
German,	3 (123).	German,	3 (123).	German,	3 (125).
Logic,	3 (95).	Logic,	3 (95).	History of Philosophy,	3 (96).
Political Economy,	2 (101).	Political Economy,	2 (101).	Political Economy,	2 (101).
Thesis.		Thesis.		Thesis.	

ELECTIVE.

Seven hours a week through the year, chosen from the following studies:

Chemistry 5 (87), Physics 5 (50 or 51), Botany 5 (8 or 9), Zoology 3 (15), Histology 5 (16), Geology 5 (89), History A, 3 (98), History C,* 2 (100), International Law 2 (102) Phylosophy 2 (96*a*), English 2 (106), English 2 (106), Spanish 2 (129) or Italian 2 (128).

GENERAL INFORMATION.

TERMS AND VACATIONS.

The first term of each college year begins on the Wednesday following the tenth day of September, and closes on the Wednesday preceding Christmas. The second term begins on the Wednesday following the first day of January, and closes on the Wednesday following the twenty-sixth day of March. The third term begins on the Wednesday following the second day of April, and closes on Commencement Day, which is the Wednesday following the eighteenth day of June.

Regular college exercises are omitted on Thanksgiving Day and the day following, on the twenty-second day of February, and on Decoration Day.

ADMISSION.

The University is open to both sexes. There is, however, no special course for women or special study, elective or otherwise, such as music or painting; but in the latter the assistant in drawing will receive private pupils. Neither is there a hall for the residence of women. They are assisted in finding boarding places in respectable families; but the Faculty is not so situated as to exercise supervision over their conduct out of college hours. Parents who send their daughters to the University should therefore be well satisfied as to their discretion, or else should place them under the care and control of the family with which they board.

The entrance examinations are held on the two days preceding Commencement Day and the two days preceding the opening of the fall term. A part of the examinations may be taken in June and the remainder in September. Conditions incurred at the June examinations must be removed at the September examination.

Candidates who come from other colleges or universities, are required to bring certificates of honorable dismission.

Admission to the Four-year Courses.—Candidates for admission must be at least sixteen years of age and must be provided with credentials of scholarship from their last instructor or from the last institution with which they have been connected.

There are three modes of admission to the Freshman class:

1. The candidate may enter the preparatory department of the university and complete the course there prescribed. This course is published in the present catalogue, and can be found by consulting the index or table of contents.

2. The candidate may, without attending the preparatory department, pass an examination in the studies prescribed in the preparatory course, or in others that are equivalent.

3. Diplomas and certificates of high schools and normal schools in Ohio, will be accepted in lieu of examination, for preparatory studies, under the following conditions:

(*a.*) Each certificate must state in detail the studies pursued, the text books used, the amount of work done in each study, the amount of time devoted to it, the date of the examination and the rank or standing of the candidate in it. A copy of the course of study should accompany the certificate.

(*b.*) The certificate will be accepted for such studies only, or for such a part of each, as shall show to have been satisfactorily accomplished. In no case will less than a full term's work in any study be accepted.

(*c.*) The certificate must be accompanied with a diploma, showing that the candidate has completed the course of study. But the Faculty may exempt from this condition schools whose work is known to be exceptionally good, provided that the candidate has attended the school for two full years.

(*d.*) The certificate and diploma should be sent to the university not later than the first day of September.

(*e.*) In case the authorities of any high school or normal school desire to have a definite standing fixed for the admission of its graduates, a committee of the Faculty will visit the school, and, on the report of this committee, a standing will be fixed for the graduates of the school.

(*f.*) Whenever it becomes evident, after a sufficient trial, that the graduates of any school are not adequately prepared, the diploma and certificate of such school will no longer be accepted.

Blank certificates will be furnished by the university.

Graduates from the following high schools are admitted to Freshman standing, subject to conditions in all studies not included in their high school course:

Akron,	Galion,	Pomeroy,
Alliance,	Hamilton,	Portsmouth,
Barnesville,*	Hillsboro,*†	Richwood,†
Bellaire,	Ironton,	Sandusky,
Canton,	Lancaster,	Salem,
Chardon,	Lima,	Springfield,
Chillicothe,	Lorain,†	Steubenville,
Cincinnati,	Mansfield,	Tiffin,
Circleville,	Marietta,	Toledo,
Cleveland,	Massillon,	Troy,
Columbus,	Middletown,	Urbana,
Dayton,	Mt. Sterling,‡	Van Wert,
Defiance,	Mt. Vernon,	Warren,
Delaware,	Newark,	Wooster,
East Liverpool,	New South Lyme,	Xenia,
Elyria,	Norwalk,	Youngstown,
Fremont,	Piqua,	Zanesville.

Requirements in English. Candidates for admission by examination to the Freshman class will be examined as follows in English language, composition and rhetoric:

1. A grammatical and rhetorical analysis of short selections in prose and poetry. The rhetorical analysis will be confined chiefly to the meanings and forms of words, sentential structure, paragraphing, and figures of speech.

2. An essay of about five hundred words to be written in the presence of the examiners, correct in spelling, punctuation, capital letters, grammar, sentential structure and paragraphing. The subjects for 1891 will be taken from the following works, with the substance of which—the plots, incidents, characters, etc.,—it is expected that the candidate will make himself thoroughly familiar: Shakespeare's Julius Cæsar, and Merchant of Venice; Coleridge's Ancient Mariner; Longfellow's Evangeline; Macaulay's Essay on Lord Clive; Webster's First Bunker Hill Oration; Irving's Alhambra; Scott's Old Mortality; George Eliot's Silas Marner; Hawthorne's House of the Seven Gables. Equivalents of these will, of course, be accepted.

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* Four year course. † Conditioned in one or more subjects. ‡ Second Preparatory rank with additional credits.

For securing the proper preparation, the following course is recommended: 1st, A few lessons and constant practice in the proper use of the unabridged dictionaries. 2d, A thorough mastery of the elements of English grammar. 3d, Daily recitations for at least one term in some such work as Hill's Elements of Rhetoric and Composition. 4th, Weekly exercises in original composition, for at least one year. 5th, A careful reading of the works enumerated above.

Admission to Other Courses.—1. **Pharmacy.**—Candidates are required to pass examination in orthography, English grammar, geography, arithmetic, algebra and Latin. The requirement in algebra is the first eight chapters of Wentworth's Elements of Algebra, or an equivalent amount. The requirement in Latin includes the elements of Latin grammar, and twelve chapters in the first book of Cæsar's *De Bello Gallico*, with questions on the forms, constructions, and subject matter. The inflections should be thoroughly mastered. The Roman method of pronunciation is preferred. Candidates who have had two years' experience in a drug store will be admitted as special students without examination in algebra or Latin; provided that if any such student afterwards becomes a candidate for a degree, he shall take the omitted examinations before the degree is conferred.

2. **Veterinary Medicine.**—Candidates are examined in orthography, English grammar, geography and arithmetic.

3. **The Short Course in Agriculture.**—Candidates are examined in orthography, English grammar, geography and arithmetic; but those who are over twenty-one years of age are admitted without examination.

4. **The Short Course in Mining.**—Candidates are examined in orthography, English grammar, geography and arithmetic, but those who are over twenty-one years of age are admitted without examination.

For admission to either of these courses—1, 2, 3, 4—high school diplomas or teachers' certificates, good for at least one year, will be accepted in lieu of examination in the subjects which they include.

Admission to Special Studies.—Students who desire to pursue special lines of work in the Collegiate department of the University, and do not desire to become candidates for degrees, will be admitted on the following conditions:

1. When the greater part of the special work lies in the courses in Arts and Philosophy, the regular entrance examinations must be passed.

2. When the greater part of the special work lies in the course in Science or in the technical courses, the examination in the language required for admission may be omitted at the option of the appropriate committee.

3. Applicants who are not less than twenty-one years of age, after passing an examination for admission to the preparatory department, may be excused by the appropriate committee from such studies or examinations in the preparatory course as may be deemed best; provided, that if any such student afterwards becomes a candidate for a degree, he shall pass the omitted examinations at least one year before the degree is conferred. For the courses in mechanical and electrical engineering the limit in age for such students is eighteen years instead of twenty-one.

4. On entering the University, students desiring to pursue special work are required to lay before the proper committee, for approval or modification, a written statement of the end they have in view, the studies proposed for the attainment of that end, and the probable period of attendance. Such students will be held as strictly to their accepted schemes of work as are the regular undergraduates to their courses of study. Permission to enter as special undergraduates will be refused to all of whose definiteness of purpose the committee fails to receive satisfactory evidence, and will be withdrawn whenever the conditions on which it was granted cease to exist.

MATRICULATION.

Each student, on being admitted to the college classes, shall sign the matriculation book, and shall be certified by the President or the Secretary of the Faculty to the secretary of the appropriate committee, with a statement of the course and class to which he is admitted, and what conditions, if any, are imposed.

Each special student, on being admitted to the work of the college classes, shall sign the matriculation book, and shall be certified as such to the proper secretary.

REGISTRATION.

All students are required to register and procure their class cards on the first Wednesday of each term, between the hours of 9 A. M. and 12:30 P. M., or between 2 and 5 P. M.

Former students who fail to register on this day, will be charged one dollar in addition to the usual incidental fee, for the first day of delinquency, and fifty cents additional for each subsequent day.

AMOUNT OF WORK.

No student is permitted to take less than fifteen or more than eighteen hours a week of class-room work, except by special permission of the committee of the school in which he is enrolled; and no student conditioned in any study will be permitted, during the following term, to take more than the regular work of the class to which he belongs.

STANDING.

The standing of collegiate students shall be reported at the end of each term. This standing shall be determined by the head of each department by such means and methods as he may choose; provided, that no student shall be reported failed without the opportunity of a written examination.

The standing of students in each study is reported at the end of a term as "passed with merit," "passed," "conditioned," or "failed."

The standing "passed," or "passed with merit," indicates that the student has obtained full credit for the term's work in the study in which this standing is obtained.

The standing "conditioned" indicates that credit for the term's work in the study in which the condition was incurred, is deferred. The student is given an opportunity in the following term to obtain this credit by a re-examination; or, if the study be a continuous one, the professor in charge may, at his discretion, excuse the student from re-examination, and allow credit to be obtained by successfully pursuing the study during the following term. If the student thus excused from re-examination does not pass upon the work of the second term, he is reported as "failed" in the work of both terms.

The standing "failed" indicates that no credit is given for the term's work in that study in which the failure is incurred, and that the student will be required to pursue the same study, in class, in the following year. In case of failure in any continuous study, the work of the term in which the failure occurred must be repeated, in class, before any subsequent term's work in that study can be commenced.

Unexcused absence from any regular examination is construed as a failure therein.

At the close of each term students must obtain credit for two-thirds of their work for the term in order to retain their connection with the University; but if students who have not passed in the requisite amount of work can make good their deficiency by the removal of conditions, they may do so at the beginning of the following term, and thus reinstate themselves.

Students reported at the end of any term as failed in one-half of their work, forfeit their connection with the University.

DEGREES.

1. **Graduate Degrees.**—The degree of Bachelor of Arts is conferred on students who have completed the general course in Arts; the degree of Bachelor of Philosophy on those who have completed the general course in Philosophy or in Modern Languages; the degree of Bachelor of Science on those who have completed the general course in Science.

The degrees of Civil Engineer, Mechanical Engineer and Engineer of Mines are conferred on those who have completed the respective courses in engineering. Those who complete the course in Electrical Engineering receive the degree of Mechanical Engineer.

The degree of Bachelor of Agriculture is conferred on those who have completed the full course in Agriculture; that of Doctor of Veterinary Medicine on those who have completed the course in Veterinary Medicine; and that of Graduate in Pharmacy on those who have completed the course in Pharmacy.

2. **Postgraduate Degrees.**—(*a.*) **Masters' Degrees** are conferred upon graduates in Arts, Philosophy, or Science at the end of not less than one year's residence, during which the candidate is required to pursue and complete an approved course of study in the University. He is required, in addition, to present an acceptable thesis upon some subject connected with his course of study. Masters' degrees are conferred without residence upon graduates of this institution, upon the same conditions of study and thesis as above; but this degree will not be so conferred within less than three years after graduation.

(*b.*) **Doctors' Degrees.**—The degree of Doctor of Philosophy is conferred upon Bachelors of Arts, Bachelors of Philosophy, and Bachelors of Science at the end of not less than three years' residence and study, during the latter two years of which the candidate is required to pursue and complete an approved course of study in at least two distinct departments of the University. He is, in addition, required to present an acceptable thesis, embodying original research.

The degree of Doctor of Science is conferred upon Bachelors of Science and graduates in the full technical courses, at the end of a course of special, advanced study in science, upon the same conditions as to residence, time and other requirements as are established for the degree of Doctor of Philosophy.

CHAPEL EXERCISES.

A daily exercise is held in the University lecture room, at which the attendance of all students is required, except when excused for special reasons. The services usually consist of singing, reading of the Scriptures, and prayer.

LECTURES.

During each year a series of discourses on moral and religious topics is delivered before the University on Sunday afternoons. The subjects have covered a wide range, and have been discussed with distinguished ability. Men of wide reputation for their talents and eloquence have taken part in these courses, and the strong interest awakened has been attested by large audiences.

The course delivered last year was as follows:

1. The Duty of the North and the Nation to the Children of the South. Rev. A. D. Mayo, D. D.

2. The Silent Partner in all Ownership. President W. I. Chamberlain.
3. Socialism and the Church. John Bascom, LL. D.
4. Nationalism and Christianity. Rev. W. G. Williams, D. D.
5. True Socialism. Rev. Washington Gladden, D. D.
6. The Control of Thought. Rev. David H. Moore, D. D.
7. The Divinity of Christ. Bishop R. S. Foster, D. D., LL. D.

THE BATTALION.

Under the law of Congress establishing the University, it is required that instruction shall be given in military science and tactics. In accordance with this provision, an officer of the regular army has been detailed to take charge of the department, and the trustees have directed that all male students, except Seniors, Juniors, and such others as may be specially excused, shall be enrolled in the battalion. A uniform has been prescribed, with which each member is required to provide himself; and fifty minutes a day is devoted to drill, except on those days when instruction in tactics is given.

LITERARY SOCIETIES.

The Alcyone and Horton Literary Societies have commodious and well furnished halls in the main building. The Browning Literary Society, composed of young ladies, also has a hall which has been neatly and tastefully fitted up. All these societies meet weekly, and their work offers to the student a very desirable training in composition, public speaking and parliamentary order.

CHRISTIAN ASSOCIATIONS.

One of the most commendable organizations in the University is a branch of the International Young Men's Christian Association. It was begun several years ago by a few Christian students, and has steadily grown in numbers and influence. Services are held weekly. New students are made cordially welcome, and young church members will here enjoy Christian influences and fellowship in college life.

A branch of the King's Daughters has also been organized by the young women, and holds its meetings once a week.

ATHLETICS.

The campus affords an excellent opportunity for general athletics. The students have an athletic association, under the auspices of which an annual "Field Day" is held, members of the association competing for prizes in the various contests usual on such occasions. There are also clubs in archery, lawn-tennis, base ball, and foot-ball, who meet teams from other colleges at proper times. Much interest is taken in these sports by the students, and the Faculty.

OHIO AGRICULTURAL EXPERIMENT STATION.

The State has established an agricultural experiment station, which is located at the University, and is sustained by appropriations from the government of the United States.

Experiments and investigations are carried on both in the field and in the laboratory, and deal with such great agricultural interests as the soil, grain raising, stock farming and dairy husbandry, fruit and vegetable culture, and forestry. The increased income of the station will enable it to prosecute this work on a much larger scale than heretofore.

The station is prepared to test varieties of seeds and plants; to analyze and test fertilizers and manures; to examine seeds that are suspected of being unsound or adulterated; to identify and name weeds and other plants; to investigate and describe the habits of injurious and beneficial insects; and other work of a similar character that properly comes within its province. The following staff is employed in carrying on the work of the station: director, horticulturist, agriculturist, botanist, entomologist, chemist, bacteriologist, veterinarian and meteorologist.

OHIO METEOROLOGICAL BUREAU.

In 1882, the Legislature established a State Meteorological Bureau, of which the professor of Physics in the University is director. It is provided with a full equipment of standard instruments for meteorological observations. Corresponding equipments are also provided for voluntary observers throughout the State. At the present time, the bureau receives regular reports from about forty stations.

STATE FORESTRY BUREAU.

This bureau has been established and located at the University by the Legislature for the purpose of inquiring into the best means of preserving and utilizing the forests of the State.

EXPENSES.

College Dues.—There is no charge for tuition in any department of the University; but a charge of $5 a term, or $15 a year, is made against all students, under the head of incidental expense. In the case of former students, if this fee is not paid until the second day of the term, one dollar will be added; and for each succeeding day of delinquency, fifty cents will be added. Students in the laboratories are required to pay fees to cover, in part, the expenses of the materials consumed, and of the deterioration of the expensive instruments employed. *All term-dues must be paid at the opening of each term, as a condition of admission to classes.*

The following are the fees charged in the different laboratories:

Laboratory of General Chemistry	$10 00
Laboratory of Agricultural Chemistry	8 00
Laboratory of Physics, five hours a week	7 00
Laboratory of Physics, two or three hours a week	5 00
Laboratory of Pharmacy	8 00
Laboratory of Histology	5 00
Laboratory of Comparative Anatomy	5 00
Laboratory of Zoology	5 00
Laboratory of Physiology	5 00
Laboratory of Botany	2 00
Metallurgical Laboratory	7 00
Mechanical Laboratory	5 00

Other Expenses.—There are two dormitories on the grounds for the use of students. Each occupant is charged by the University a rent of $1.50 a term.

The South Dormitory affords unfurnished rooms to such students as desire to board themselves, and thus to reduce their expenses to a minimum. Twenty students can be accommodated in this building, two students being assigned to each room. The expense of living in this way falls below $2 per week. Application for rooms should be made to the President of the University.

The North Dormitory will accommodate more than sixty students. It is, for the present, turned over to the University Club. Board, furnished room, fuel, light and washing are, at present prices, supplied for about $3.25 a week. New students will not, however, be admitted without special recommendation to the President of the University, and by him to the club.

Boarding Clubs are also formed in the neighborhood of the University. Within the last year several such clubs have been organized with very satisfactory results. Furnished rooms are rented at 75 cents to $1 a week for each student, and the cost of board is $2 to $3 a week.

Board, with furnished rooms, can be obtained in private families within convenient distances of the University at rates varying from $4 to $5 a week. The ruling rate may be taken as $4.50.

The uniform with which the members of the battalion are required to provide themselves costs about $23.

The expenses of a year at the university may be estimated as follows:

	Low.	Moderate.	Liberal.
Incidental fees	$15.00	$15.00	$15.00
Laboratory fees	———	15.00	54 00
Books and Stationery	15.00	25 00	40.00
Room	4.50	37.00	75.00
Furniture	10.00	———	———
Board	60.00	110.00	150.00
Uniform	20.00	22.50	25.00
	$124.50	$224.50	$359.00

The second and third estimates for room include light, fuel and care. The third one is for a room occupied by a single student.

The requirements for laboratory fees and books depend upon the course of study pursued. The estimates do not include clothing (except uniform) or traveling expenses.

EMPLOYMENT.

There is a large amount of work on the University farm connected with the Agricultural Experiment Station which can be performed to advantage by the students, and for which they are paid at current rates for such labor. Some students defray all their expenses in this way. Preference is given to students in the department of Agriculture, and to those who are ready to devote a certain number of hours each day to the work assigned. Applications for employment should be made to Mr. C. E. Thorne, Director of the Station. Work can not be promised to all applicants.

THE THIRTEENTH ANNUAL COMMENCEMENT,

HELD JUNE 25, 1890.

ANNUAL ADDRESS.

ALBERT H. TUTTLE, University of Virginia.
Subject: "The University of Utopia."

DEGREES CONFERRED AND THESIS SUBJECTS.

I. GRADUATE DEGREES.

BACHELOR OF AGRICULTURE.

KNOTT CROCKETT EGBERT, Tiffin.
Thesis: A Comparative Study of Two Species of Cultivated Cherry.

CHARLES PINCKNEY FOX, Springboro.
Thesis: Food Preservatives and the Public Health.

BACHELOR OF ARTS.

HENRY CHARLES BENNETT, Columbus.
Thesis: Ancient Oratory; Its Development.

GEORGE PERRY GRIMSLEY, Columbus.
Thesis: The Athenian Democracy as an Experiment in Self-Government.

JESSE LEE JONES, Martin's Ferry.
Thesis: Ancient Arms and Armor.

HUGH CLARENCE LAUGHLIN, Belle Centre.
Thesis: The Religious Element in English Literature.

ALICE HYNES MOODIE, Columbus.
Thesis: Imitation of Nature in Ancient Architecture.

CHARLES BRADFIELD MORREY, Chester Hill.
Thesis: A Study of the Brain of the Common Red Bird (*Cardinalis Cardinalis*).

NELLIE TALBOT, Columbus.
Thesis: A Critical Discussion of the *Parmenides* of Plato.

BACHELOR OF PHILOSOPHY.

ADA MABEL BASTERDES, Columbus.
Thesis: Racine and Victor Hugo as Dramatists.

ROBERT KELLOGG BEACH, Kelloggsville.
Thesis: The Municipal Government of Columbus—Its Present Condition and its Needs.

MANA RUCKLE NEEDELS, Groveport.
Thesis: The Effect of The Roman Conquest on England.

BERTHA SCOTT, Columbus.
Thesis: The Argument from Design as Affected by the Doctrine of Evolution.

CARL CLYDE SMITH, Chester Hill.
Thesis: The Fur Seal Fishery Dispute.

BACHELOR OF SCIENCE.

CHARLES LINCOLN ARNOLD, Milan.
Thesis: The Determination of Gravity.
JOSEPH CHALMERS RITCHEY, Uniontown.
A Study of the Brain of *Mus Decumanus*.

CIVIL ENGINEER.

ALBERT HENRY HELLER, Wapakoneta.
Thesis: A Review of the Broad Street Bridge Across the Scioto River at Columbus.
JOSEPH HENRY LARGE, Freedom.
Thesis: A Review of the Superstructure of the Third Avenue Bridge.

MECHANICAL ENGINEER.

RALPH DAVENPORT MERSHON, Zanesville.
Thesis: The Determination of the Permeability of Iron and its Alloys.
RUSSELL STIMSON FEICHT, Dayton,
and
CHARLES EDWARD SKINNER, Redfield.
Joint Thesis: The Efficiency of the Ohio State University Electrical Plant.

DOCTOR OF VETERINARY MEDICINE.

SAMUEL ELLSWORTH BENNETT, East Liverpool,
and
WILLIAM FINLEY LAVERY, South Solon.
Joint Thesis: Termination of Nerve Fibers in the Liver.
HARVEY E. BRIER, Troy,
and
DAVID STUART WHITE, Durham.
Joint Thesis: The Parasite *Sclerostomum Equinum* as a Predisposing Cause of Colic in Horses.

GRADUATE IN PHARMACY

WILLIAM HENRY ARMSTRONG, Delaware.
Thesis: Incompatibility.
GEORGE FRANKLIN MASON, Groveport.
Thesis: An Examination of the Commercial Tincture of Opium.
DANIEL E. MILLER, Dayton.
Thesis: Assay of Tinctures of *Nux Vomica*.

II. POST GRADUATE DEGREES.

MASTER OF ARTS.

ALBERTA D. GARBER, B. PH., Columbus.
Thesis: Methods of Electing the President.

MASTER OF SCIENCE.

THEODORE L. GRIFFIN, B. SC., Columbus.
Thesis: Distribution of Sulphur and Coal.

DOCTOR OF SCIENCE.

CLARENCE MOORES WEED, M. SC., Columbus.
Thesis: A Monograph of the Harvest Spiders of America, North of Mexico.

THE PREPARATORY DEPARTMENT.

STANDING COMMITTEE.

President SCOTT, Chairman *ex-officio;* Professor EGGERS, Secretary; Professors DERBY, LAZENBY, THOMAS, KNIGHT, BOHANNAN, CHALMERS, OGLE.

GENERAL INFORMATION.

This department is under the immediate control of a standing committee of the Faculty, which supervises the studies of pupils and their relations to the University. The pupils are subject, in general, to the same rules and regulations as the students of the Collegiate department. Their attendance at the University is required only during the hours of recitation and other prescribed college exercises, such as drill, chapel, etc., their lessons being prepared elsewhere.

The classes are under the immediate supervision of the college professors, and many of them are taught by the professors in person.

The preparatory courses are provided for those who enter the University directly from the public schools. The one leading to the general courses and to the courses in Engineering, extends through two years, and includes the studies usually taught in the better grade of high schools. The one leading to the course in Agriculture is one year in length.

ADMISSION.

Candidates for admission to the Preparatory department must be at least fourteen years of age, and must be provided with credentials of scholarship from their last instructor or the last school with which they have been connected.

Graduates of the high schools of the state are admitted without examination. Applicants having a teacher's certificate of twelve months are also admitted without examination, except in algebra when this study is not included in the certificate, and in Latin when it is desired to enter the course in Arts or in Philosophy. Other candidates must pass a satisfactory examination in the branches taught in the common schools, viz.: *orthography, writing, grammar, geography, arithmetic* and *algebra*. Beginning with September, 1893, United States History, will also be required. The amount of algebra required is the first eight chapters in Wentworth's Elements of Algebra, or their equivalent. Candidates for the course in Agriculture or Veterinary Medicine are not examined in algebra.

For admission to the Preparatory course in Latin, one year of Latin is required. The examination for entrance to that course will include the elements of Latin grammar and the first twelve chapters of the first book of Cæsar's *De Bello Gallico* (with questions upon the forms, constructions and subject matter). Students are most often found deficient in a ready and accurate knowledge of the inflectional forms. These should be thoroughly mastered. The Roman method of pronunciation is preferred.

Persons desiring to prepare for special undergraduate courses in the Collegiate department must first obtain admission to the Preparatory department. They must then make application to the committee of the appropriate collegiate school, which will certify to the Committee of the Preparatory department the studies required as a preparation for the course proposed.

The entrance examinations for 1891 will be held at the University on Monday and Tuesday, September 16 and 17. The examinations in geography, grammar and Latin will take place on Monday, those in the other branches on Tuesday.

EXAMINATIONS.

In accordance with the rules of the Faculty, a written examination of each class is held at the close of each term, and the standing of pupils is reported as "passed with merit," "passed," "conditioned," or "failed."

Pupils conditioned in any study at the close of a term are held for examination in that study during the following term at such time as may be designated by the professor in charge of the department in which the condition was incurred.

At the close of each term pupils must pass examination in studies representing at least ten hours a week in order to retain their connection with the department. If pupils who have not passed in the requisite amount of work can make good their deficiency by the removal of conditions, they may do so at the beginning of the following term.

Pupils failing in examination in studies representing ten hours a week, forfeit their connection with the department.

Pupils who are reported at the end of a term, or at the beginning of the following term, as failed in any continuous study, are dropped from the class in which the failure occurs.

Pupils reported as failed in any examination are required to repeat the study in which they have failed, in the corresponding term of the following year, unless excused by the committee.

Unexcused absence from any examination is construed as a failure therein.

DRILL.

All male pupils except those who are specially excused by the President of the University, are required to pursue the study of military science, and are enrolled for drill in the battalion.

DISCIPLINE.

Four demerit marks are recorded against a pupil for every unexcused absence from a class or from drill; two for every unexcused failure in recitation, and one for every unexcused tardiness.

When any pupil has received ten demerit marks, he is admonished by the President.

When any pupil has received twenty demerit marks, notice thereof is sent to his parent or guardian.

When any pupil has received forty demerit marks, his connection with the department is thereby forfeited.

No account of demerits is continued longer than the close of the academic year.

COURSES OF INSTRUCTION.

I. Preparatory to the General Courses and to the Courses in Engineering.

The entire work of the Preparatory Department is required, and each study occupies five hours a week, except English composition, which occupies one hour a week.

Pupils preparing for the college course in Arts or Philosophy will take Latin; others will take German.

The courses of instruction in the department include the following subjects:

THE FIRST YEAR.

First Term.—Latin, Caesar's *De Bello Gallico*, Books III and IV; or German, Otis's German Grammar (the first 117 pages) and easy prose reading (*Neue Anekdoten*); Algebra, Wentworth's Elements of Algebra (p. 130 to p. 218); English, Hill's Elements of Rhetoric and Composition.

Second Term.—Latin, Cicero *in Catilinam*, first three orations, and Pennell's *Rome*; or German, Otis's Grammar completed, and easy prose reading (*Neue Anekdoten*); Algebra, Wentworth's Elements of Algebra completed; United States History, Johnston's History of the United States.

Third Term.—Latin, Cicero's fourth oration against Catiline and the orations *Pro Archia* and *Pro Marcello*, with Pennell's *Rome* completed; or German, Otis's Grammar reviewed and German reading; American Civil Government, Martin's Civil Government; Botany, Gray's Botany revised.

THE SECOND YEAR.

First Term.—Latin; Virgil's Æneid, Books I and II, and Roman Antiquities; or German, Grammar reviewed by topics, German prose, *Die Braune Erica;* Geometry, Wentworth's Plane Geometry complete; Physical Geography, Geikie's Physical Geography; English Composition and reading of English classics (Shakspeare's *Julius Caesar* and *Merchant* of *Venice*, Coleridge's *Ancient Mariner*, Longfellow's *Evangeline*.)

Second Term.—Latin; Virgil's Æneid, Books III, V and VI; or German, Heine's *Harzreise*, begun; Geometry, Wentworth's Solid Geometry complete; Physics, Gage's Physics (about 200 pages, with problems); English composition and reading of English classics (Macaulay's Essay on *Lord Clive*; Addison's *Sir Roger de Coverley*, Scott's *Ivanhoe*.)

Third Term.—Latin, Latin Composition; or German, Heine's *Harzreise*, completed; *Licht* and *Warme;* Plane Trigonometry, Locke's Elementry Trigonometry; Physics, Gage's Physics, completed, with problems; English composition and reading of English classics, (George Eliot's *Silas Marner*, Hawthorne's *House of the Seven Gables*, Webster's Bunker Hill Oration.)

II. Preparatory to the Full Course in Agriculture.

Each study occupies five hours a week, except Field Measurements and Mechanical Laboratory, which occupy three hours each.

First Term.—Physical Geography, Geikie's Physical Geography; **Geometry,** Wentworth's Plane Geometry; **Agricultural Chemistry,** lectures and laboratory work.

Second Term.—Field Measurements; Mechanical Laboratory; Physics, Gage's Physics; **Agricultural Chemistry,** lectures and laboratory work.

Third Term.—Botany, Wood's Class Book of Botany; **Physics,** Gage's Physics; **Agricultural Chemistry,** lectures and laboratory work.

Alumni.

ALUMNI ASSOCIATION.

OFFICERS.

J. P. Milligan, '86, Columbus, Ohio ..... *President.*
J. N. Bradford, '83, Columbus, Ohio ..... *Vice-President.*
C. P. Sigerfoos, '89, Columbus, Ohio ..... *Secretary.*
Frederick Keffer, '82, Columbus, Ohio ..... *Treasurer.*

COMMITTEE ON COLLEGE AFFAIRS.

	Term expire
Chas. E. Higbee, '83, Albuquerque, N. Mex.	1891.
H. L. Wilgus, '82, Columbus, Ohio	1892.
F. W. Sperr, '83, Columbus, Ohio	1894.
C. P. Sigerfoos, '89, Columbus, Ohio	1895.

EXECUTIVE COMMITTEE.

The officers of the Association.

LIST OF ALUMNI.

1878.

C. H. Dietrich, B. Sc., Hopkinsville, Ky., superintendent of schools.
W. A. Dunn, B. Sc., M. D., Cincinnati, O., physician, died Nov. 7, 1887.
Ferdinand Howald, B. Sc., Rush Run, W. Va., manager Rush Iron, Coal & Coke Co.
C. C. Howard, B. Sc., Columbus, O., analytical chemist.
J. F. McFadden, B. A., Columbus, O., attorney-at-law.
A. B. Townshend, B. Sc., M. D., 47 E. 30th street, New York, N. Y., physician.

1879.

J. S. Humphrey, B. Sc., Garden City, Kan., county surveyor.
A. B. McMackin, B. Sc., Logansport, Ind., clergyman.
M. Frank Morrison, B. Sc., Cleveland, O., Mrs. S. H. Short.
W. F. Noble, B. A., Tiffin, O., attorney-at-law.
Henry Snyder, B. Sc., Oxford, O., professor of physics, Miami University.
R. S. Towne, B. Sc., E. M., Kansas City, Mo., Vice-Pres't Mexican Ore Co.

1880.

E. E. Corwin, B. A., Columbus, O., attorney-at-law.
Arthur Cunningham, B. A., 107 Lincoln st., Columbus, O., book-keeper.
H. D. Gregory, E. M., Columbus, O., civil engineer.
J. P. Jones, B. A., 23 E. State st., Columbus, O., city solicitor.
J. H. McCormick, M. E., Columbus, O., draughtsman.
S. H. Short, B. Sc., E. 9th ave., Cleveland, O., electrical engineer.
Florizel Smith, B. A., 106 S. High st., Columbus, O., attorney-at-law.
Alice M. Townshend, B. A., Bement, Ill., Mrs. Charles M. Wing.
J. C. Ward, B. A., Painesville, O. clerk of court.

1881.

Josephine M. Bates, B. Ph , Columbus, O., Mrs. Florizel Smith.
W. K. Cherryholmes, B. Sc., London, Eng., eye and ear institute.
C. M. Lewis, B. A., New York City, on New York World.
David O'Brine, B. Sc., E. M., M. D., Fort Collins, Colo., professor of chemistry and geology in State Agricultural College.
Harwood R. Pool, B. Ph., Produce Exchange building, New York, N. Y., attorney-at-law.
K. D. Wood, B. A., Columbus, O., secretary Ohio Paper Co.

1882.

W. W. Donham, B. Sc., Forgy, O., superintendent of schools.
O. L. Fassig, B. Sc., Washington, D. C., Librarian in U. S. Signal Service.
F. W. Fay, B. A., 540 E. Town st., Columbus, O., architect.
Sioux Glover, B. Sc., Errid, Pa., Mrs. Horton.
Frederick Keffer, E. M., Columbus, O., electrical engineer and assistant in chemistry, O. S. U.
Irvin Linson, B. A., Los Angeles, Cal., teacher.
J. A. McDowell, B. Sc., Columbus, O., electrical engineer and manufacturer.
Cora Warner, B. Ph., Columbus, Ohio.
H. L. Wilgus, M. Sc., Columbus, O., attorney-at-law.

1883

Fremont Ackerman, C. E., civil engineer.
J. N. Bradford, M. E., Columbus, O., teacher of drawing, O. S. U.
J. J. Dunn, E. M., Columbus, O., county surveyor.
J. H. Galbraith, B. Ph. Columbus, O., managing editor, Daily Press.
C. E. Higbee, B. Sc., Albuquerque, New Mex., teacher.
A. B. Howard, B. Ph., Deer Lodge City, M. T., clergyman.
G. W. Knopp, B. Sc., Pittsburg, Penn., bridge builder.
C. F. Marvin, M. E., Washington, D. C., assistant professor, U. S. Signal Service.
C. C. Miller, B. A., Sandusky, O., superintendent of schools, trustee O. S. University.
F. W. Sperr, E. M., 72 E. 9th ave., Columbus, O., ass't prof. mining engineering, O. S. U.
E. M. Van Harlingen, B. Sc., Winnemucca, Neb., U. S. Signal Service.

1884.

E. O. Ackerman, C. E., ass't engineer, Northern Pacific R. R.
J. T. Anderson, B. A., David's Island, N. Y. Harbor, lieutenant U. S. A.
Helena W. Chamberlain, B. A., Union Furnace, O., Mrs. Ellis Lovejoy.
C. W. DeLamater, B. A., 1620 Corby st., Omaha, Nebraska, attorney-at-law.
G. W. Dun, B. Sc., 189 N. High st., Columbus, O., Sec. police commissioners.
J. R. Lovejoy, B. Sc., Lynn, Mass., Thompson-Houston Electric Light Company.
C. V. Mead, B. Ph., Denver, Col., attorney-at-law.
G. L. Morton, M. E., Washington, D. C., examiner in U. S. Patent office.
Edward Orton, Jr., E. M., Columbus, O., chemist.
Annie W. Sabine, M. A., 10 Dana st., Cambridge, Mass.
E. E. Sparks, B. A., Prin. Preparatory Dep't State College, Pa.
J. B. Wikoff, B. Ph., Cambridge, O., attorney-at-law.

1885.

W. P. Bentley, B. Ag., China, missionary of the Christian church.
C. C. Greene, B. Sc., Beaver City, Neb., physician.
W. H. Harrison, C. E., Omaha, Neb., draughtsman, Union Pacific Railway Co.
Ellis Lovejoy, E. M., Union Furnace, O., superintendent of brick works.
W. R. Malone, B. A., Massillon, O., principal of high school.
C. A. Marple, B. Sc., Louisville, Ky., teacher in high school.
M. N. Mix, B. Ph., Pittsburgh, Pa., assistant editor Dispatch.
W. L. Peters, M. E., Riverside, Cal., manufacturer.
C. V. Pleukharp, M. E., Albuquerque, New Mexico, clergyman.
W. J. Root, E. M., New Straitsville, O., chemist of Bessy Furnace.
E. L. T. Schaub, M. E., 353 S. Sixth st., Columbus, O., machinist.
C. F. Scott, B. A., Pittsburgh, Pa., electrician, Westinghouse Electric Co.
Mary O. Scott, B. A., 41 King ave., Columbus, O., teacher in public schools.
P. C. Smith, B. Sc., Middle Branch, O., farmer.
F. A. Taylor, B. A., Wheeling, W. Va., editor of the Quest.
G. R. Twiss, B. Sc., Youngstown, O., principal of high school.

1886.

W. A. Connell, E. M., Portsmouth, O., principal of high school.
E. J. Converse, B. A., Columbus, O., attorney-at-law.
G. S. Cunningham, B. Ph., Lancaster, O., attorney-at-law.
W. S. Devol, B. Ag., Marietta, O.
J. H. Erskine, E. M., Lowellsville, O.
Clara Fisher, B. A., Columbus, O., teacher in high school.
F. E. Hill, B. Sc., M. D., Norwood, O., physician.
A. A. Jones, C. E., Columbus, O., draughtsman, Ohio Tool Co.
W. W. Keifer, B. A., Springfield, O., attorney-at-law.
G. A. Masters, C. E., Toledo, O., Smith Bridge Co.
J. P. Milligan, B. A., Columbus, O., clergyman.
W. C. Sabine, B. A., 10 Dana st., Cambridge, Mass., instructor in physics, Harvard University.
Otto Schroll, C. E., Wheeling, W. Va., railroad engineering.
Anna N. Scott, B. A., 1247 Summit st., Columbus, O., teacher.
H. P. Smith, B. Sc., Portsmouth, O., teacher in high school.
W. P. Vandervoort, E. M., Morrow, O., principal of high school.
W. B. Viets, E. M., Columbus, O., ass't analytical chemist, O. S. U.
S. P. Watt, M. E., Cincinnati, O., draughtsman and mechanical engineer, Universal Radial Drill Co.

1887.

William F. Charters, B. Ph., Chillicothe, O., tax inquisitor.
Howard P. Converse, B. Sc., Trenton, N. J.
Harry Corns, B. A., Columbus, O., principal Northwood school.
Fredericka Detmers, B. Sc., Columbus, O., assistant state experiment station.
Vernon J. Emery, B. A., Lincoln, Neb., teacher of Latin, Univ. of Neb.
Mark Francis, D. V. M., College Station, Tex., professor veterinary medicine.
William H. Hannum, B. A., missionary of Presbyterian church, Kolhapur, India.
Arthur T. Heath, G. Ph., Cuyahoga Falls, O.
Robert Hazlett, Jr., C. E., Wheeling, W. Va., civil engineer.
William F. Hunt, M. E., St. Paul, Minn., teacher.
Wilby G. Hyde, B. A., Chillicothe, O., attorney-at-law.
Charles H. Krieger, G. Ph., Columbus, O., pharmacist.
William McPherson, Jr., B. Sc., Toledo, O., teacher in high school.
Annie Mullay, B. Ph., Columbus, O.
Joseph S. Myers, B. A., Pittsburgh, Pa., telegraph editor.
Uriah H. Myers, E. M., Chicago, Ill., chemist Chicago Steel Works.
Halbert E. Payne, M. E., Bridgeport, Conn., Yost Writing Machine Co.
Frank A. Ray, E. M., Buchtel, chief engineer C. & H. Coal and Iron Co.
Archibald C. Reeves, C. E., Dayton, O., civil engineer.
Daisy M. Scott, B. A., 1,247 Summit st., Columbus, O., teacher in high school.
May M. Scott, B. A., 1,247 Summit st., Columbus, O.
Joseph R. Taylor, B. A., Columbus, O., ass't in drawing, O. S. U.
George F. Weidner, G. Ph., Columbus, O., pharmacist.
Henry J. Woodworth, B. Sc., Nelsonville, O., Ellsworth and Morris Coal Co.
Oscar C. Zaumseil, C. E., Ripley, O.

1888.

Chester H. Aldrich, B. A., Ulysses, Neb., teacher.
Gaines G. Atkins, B. A., Cincinnati, O., student in law school.
Fred S. Ball, B. Ph., Atlanta, Ga., stenographer.
Emma Boyd, B. Ph., Mt. Gilead, O., principal high school.
Frederick W. Brown, E. M., Idaho, engineering.
Marshall F. Capron, M. E., Buchtel, O., with C. & H. Coal & Iron Co.
Josephine M. Cathcart, B. Sc., Columbus, O.
Frederick J. Cellarius, C. E., Dayton, O.
William S. Crawford, B. Ph., Missoula, Mont., correspondent "Ausconda Standard."
George B. Fravel, M. E., Columbus, O., draughtsman.
Arthur Hartwell, M. E., Pittsburgh, Pa., Westinghouse Electric Co.
Harry Hedges, B. A., Grand Forks, N. Dak.
Lucius A. Hine, E. M., Sandusky, O., principal of high school.
Edward A. Kemmler, C. E., Columbus, O., ass't in civil engineering, Ohio State University.
Benjamin G. Lamme, M. E. Pittsburgh, Pa., with Westinghouse Electric Co.
Edgar W. Mix, B. Sc., Lynn, Mass., with Thompson-Houston Electric Co.
William T. Morrey, B. A., Columbus, O., teacher in high school.
Frank M. Raymund, B. A., Columbus, attorney-at-law.
William O. Scheibell, E. M., Idaho, engineering.
Emma Scott, B. Sc., Cincinnati, O., medical student.
Charles C. Sharp, C. E., Buchtel, O., engineer.
Wilbur H. Siebert, B. A., Columbus, student in philosophy at Berlin, Germany.
Howard N. Thompson, B. Ph., Washington, D. C., newspaper correspondent.
F. L. Olcott Wadsworth, B. Sc., E. M., M. E., Worcester, Mass., assistant in physics, Clark University.

Scott A. Webb, B. Ph., Columbus, O., attorney-at-law.
Clark J. Welch, C. E., Sandy Creek, N. Y.
James A. Wilgus, M. A., Columbus, O., assistant in history, O. S. U.

1889.

George Bloom, C. E., Xenia, O.
John A. Bownocker, B. Sc., Martin's Ferry, O., teacher in high school.
Moses Craig, B. Sc., Columbus, O.
Charles Ellis, D. V. M, Blacksburg, Va., teacher of Vet. Med. in Ag. and Mech. College.
Julius Floto, E. M., Cincinnati, O., with Bacon, Floto & Co.
Charles E. Gains, B. Ph., 1189 N. High st., Columbus, O., physician.
Alberta D. Garber, M. A., Fifteenth ave., Columbus, O.
Frank B. Gregg, B. Ph., Cincinnati, O., medical student.
Theodore L. Griffin, M. Sc., Columbus, O.
Howard Hagler, B. Sc., Washington C. H.
Harrison R. Hall, E. M., Perrysville, Pa.
David R. Hancock, G. Ph., 109 Hamilton ave., Columbus, O., medical student.
Henry P. Horton, B. Ph., Wapakoneta, O., principal of high school.
Harry L. Kirker, B. Sc. Pittsburgh, Pa., Westinghouse Electric Co.
William W. Meek, B. Ph., Fifteenth ave., Columbus, O.
Charles W. Mesloh, B. A., 1348½ N. High st., Columbus, O., asst. in German, O. S. U.
Harry F. Miller, M. E., Columbus, O., engineer's office, P., C. & St. L. R. R.
Henry S. Newton, B. Sc., Lynn, Mass., Thompson-Houston Electric Co.
Albert N. Ozias, B. Sc., 485 King ave., Columbus, O., teacher of chemistry and physics in high school.
Owen W. Patchell, B. Ph., Perin's Mills, O.
Alla B. Rickey, B. Ph., 428 E. Gay st., Columbus, O., Mrs. Geo. H. Cless.
Charles P. Sigerfoos, B. Sc., 57 W. Frambes ave., Columbus, O., ass't in zool. and comp. anat., Ohio State University.
William C. Wendt, G. Ph., cor. Main st. and Grant ave., Columbus, O., drug clerk.

1890.

William H. Armstrong, G. Ph., Delaware, O.
Charles L. Arnold, B. Sc., Columbus, O., Assistant in Mathematics Ohio State University.
Ada M. Basterdes, B. Ph., 39 S. Garfield Avenue, Columbus, O.
Henry C. Bennett, B. A., Chicago, Ill., real estate.
Samuel C. Bennett, D. V. M., student in Germany.
Harvey E. Brier, D. V. M., Troy, O.
Knott C. Egbert, B. Agr., Tiffin, O.
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